THE BLIND CHILD AND HIS READING

A Handbook for Teachers of Primary Braille Reading

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FOREWORD

This book is intended to meet two specific needs in the education of the blind. First, it is hoped that teachers who are already experienced in the primary instruction of blind children may find in it suggestions for improving or changing their methods from time to time. Its special function, however, is to serve as a handbook for teachers just entering the work for the blind. With the help of this manual they should be able to adapt to the peculiar needs of blind children any educationally sound method of teaching primary reading. As a rule, teachers coming into schools and classes for the blind to-day are equipped with normal training and with teaching experience among seeing children. These teachers are already familiar with one or more "method" manuals, such as those which accompany the various series of readers, and they have had more or less experience in using such manuals.

Since the principles of teaching reading to blind children are in many respects similar to those which apply to children with sight, normal-trained teachers do not require another "method" manual. They do need a handbook which will make clear to them what changes must be made if their methods are to be successful with blind children. Although these changes are not numerous, they are fundamental and therefore extremely important. The teacher's success will depend largely upon her ability to appreciate the importance of the special methods required in the teaching of blind pupils.

If this book is not meant to be a "method" manual, neither is it supposed to take the place of the excellent

text-books on the psychology and pedagogy of reading now available. Rather, it will be found to supplement these text-books. (See bibliography.)

No attempt has been made to retell the history of the development of braille reading. Teachers who are not acquainted with that history are urged to read the monograph by Dr. R. S. French, in which he gives a critical discussion of the various systems of raised characters which have been in use at different times. Copies of this monograph may be obtained from Dr. French at the California School for the Blind, Berkeley, or may be borrowed from the library of the American Foundation for the Blind.

Acknowledgment is made to the National Society for the Study of Education for permission to reprint from Part I of the Twenty-fourth Yearbook of the Society a list of "The Commonest Words in the Spoken Vocabulary of Children Up to and Including Six Years of Age." (See pp. 186 ff.) Extensive use has also been made of the divisions of the reading program which are explained on pages 24 ff. of the Yearbook.

Acknowledgment is also made of the help derived from the valuable material found in the archives of the Uniform Type Committee, which exhibits so much painstaking work on the part of the members.

The writer wishes to express her appreciation of the cordial assistance which has been given to her by superintendents, principals, and teachers throughout this country and Canada in her study during the last three years of the problem of teaching reading to blind beginners. When educational research was first started by the Foundation, a Committee was appointed by the American Association of Instructors of the Blind to advise with the Director of the Bureau of

Research and Education and with the Research Psychologist on whatever educational work was undertaken. For their advice, their encouragement, and their active co-operation the writer wishes to express her gratitude to the members of this committee—Dr. O. H. Burritt, Mr. B. S. Joice, and Mr. Edward M. Van Cleve—and to Dr. Samuel P. Hayes, who has devoted much time to the interests of the Foundation. No one has contributed more generous assistance than has Mr. Edward E. Allen, Director of Perkins Institution for the Blind. Mr. Allen, Dr. Burritt, and Dr. Hayes, in addition to other help, have given the services of the Departments of Psychological Research at Perkins Institution and at the Pennsylvania Institution for the Instruction of the Blind, even though it must often have interfered with their own plans. Thanks are also due to Dr. Sara M. Stinchfield, who has read critically the chapter on Phonics and Speech Correction.

K. E. M.

New York City,
November, 1927.

INTRODUCTION

For some years progressive teachers of the blind have felt the need of books in special method based upon comprehensive studies which might make them authoritative. Miss Maxfield's book on reading is the first of a projected series of books upon methods of teaching the different subjects in schools for the blind. Any teacher of the seeing can easily imagine that if her pupils were blind many changes would have to be made in her methods of teaching. But just what changes are best and how far it is wise to make changes at all seems to be discoverable at present only after an extended period of trial and error, in which blind pupils must suffer for the mistakes made by their teachers.

Miss Maxfield has had unusual opportunities for the preparation of this book. For five years she was Resident Psychologist at Perkins Institution for the Blind, her primary activity being connected with the testing of intelligence and academic achievement. During this period she became fairly well acquainted with reading problems through frequent visits in the primary reading classes, followed by conferences with their teachers. Her interest and sympathetic understanding led her to attempt individual teaching of children with reading difficulties, and her experiences formed the basis of the fascinating case studies included in this book.

For the past three years as Research Psychologist at the American Foundation for the Blind she has had the problem constantly on her mind. Her wide reading is indicated by the extensive biblio-

graphies she publishes. She has visited numerous reading classes in schools for the seeing, day school classes for the blind, and residential schools for the blind, and used every opportunity to gain the ideas of the teachers themselves. The results of this extended observation are plainly shown in her book. In order to gain the co-operation of teachers in distant schools a questionnaire on reading was sent to all the schools and special classes for the blind in the United States, and many valuable suggestions were found in the answers returned. Some contributions have also come from Europe and from as far away as Australia. Though in the days of Boston Line Type which is more compact than braille, reading was often successfully taught by the "word method," only a preliminary experiment to test the value of this method in learning braille has been conducted in several grades at Perkins Institution under Miss Maxfield's supervision, and her adaptation of the standardized tests of reading for use with the blind has given still further information.

Miss Maxfield's book, then, represents the results of a careful, scientific attack on the problem of efficiency in reading, involving observation and experiment, supplemented by the suggestions and opinions of teachers, and orientated through a wide review of the literature. It does not pretend to be the final word, but may be considered as a pioneer effort in a new field. It settles some questions; it raises many others. It will be welcomed as a great assistance by new teachers of the blind. It should serve as an inspiring challenge to the experienced.

SAMUEL P. HAYES,
Mount Holyoke College.

November 22, 1927.

The Blind Child and His Reading

CHAPTER I

Fundamentals of the Reading Program for Blind Primary Pupils

There is a natural diversity of endowment among children, whether or not they have sight. Some show more aptitude for manual work, others for literary pursuits, and still others for a combination of studies belonging to both of these fields. Similarly with the blind. Some become bookworms in spite of unsound pedagogical training in primary reading, while others cannot be raised above the level of casual readers even when the best of methods are used by the most capable of teachers. Between these extremes, however, are the great majority of blind children whose interest in reading is largely determined by the teacher and her methods.

With the exception of the deaf, there is no group of people to whom reading should mean more, as an avocation and as a source of information, than it should to the blind. Nothing but the company of books can relieve the tedium of those enforced leisure hours with which every blind person is only too familiar. In fact, the blind person, whether child or adult, who has once experienced the delight to be found in the companionship of books, will come to look upon his leisure hours, not as time to be endured, but as time to be anticipated.

There is a special reason why it is important for blind children to acquire this interest in reading. If

they have really learned to read easily and not to "word-call," reading will keep them from developing those habits of indolence and of day-dreaming which are the despair of every teacher of blind pupils. Even the dull child can be taught to look upon books as an important factor in his life, provided the content of the books is not beyond his range of comprehension. The brighter child can be led to look upon books as storehouses of valuable information and sources of inexhaustible recreation. Even the child who seems to be a "born" reader may often be helped to form better reading habits so that he may obtain more profit from his reading.

Although any standard reading method in use with seeing children may be adapted to the special problem of teaching blind children, there are fundamental differences between the blind pupil and the seeing pupil, which require special procedure on the part of the teacher. These differences must not only be understood; they must be thoughtfully and carefully provided for. It is the function of this book to indicate these differences and to suggest ways of overcoming them or of adapting the program to them. In the following discussion of problems, aims, and methods, only those portions of the school curriculum are considered which exert the most influence upon these phases of the problem of teaching primary reading to blind children.

The child's aims. In teaching primary reading the teacher must constantly bear in mind two sets of objectives—her own and those of the child. The pupil's aims are simple and easily affected. The average child enters school with an enthusiasm for learning to read.

Soon, however, he has acquired one of two attitudes; he reads either grudgingly or eagerly. Which of these attitudes is to predominate will depend largely, although not entirely, upon the type of instruction the pupil has received during his first three years in school. In her efforts to accomplish her own objectives the primary teacher needs always to remember that her ends will be more easily attained if she can develop in the child a true *eagerness* for reading. This does not mean the lessening of genuine work on the part of the child, but rather that he will work more willingly.

The teacher's objectives. Before the teacher can have a clearly defined idea as to what her immediate aims should be, in her reading classes, she must know how much ground she is supposed to cover within a given period of time. This is particularly true of teachers of blind children. Because of the difficulty in holding to one program for a whole class of blind pupils, it is hard to keep in sight one's final objectives in the midst of the many individual problems. In the Twenty-fourth Yearbook of the National Society for the Study of Education, on pages 24 ff., we find the important divisions of a reading program set forth as follows:

"1. **Period of preparation for reading.** This period includes the pre-school age, the kindergarten, and frequently the early part of the first grade. Its primary purpose is to provide the training and experience which prepare pupils for instruction in reading.

"2. **The initial period of reading instruction.** The most important purposes of this period are to introduce pupils to reading as a thought-getting process and to develop ability to read independently and intel-

ligently very simple passages such as are found in the first readers in common use.

"3. **The period of rapid progress in fundamental attitudes, habits, and skills.** The distinguishing characteristic of this period is rapid development of the attitudes, habits, and skills on which intelligent interpretation, fluent accurate oral reading, and rapid silent reading depend. Appropriate instruction is provided in the second and third grades, and frequently in the fourth grade.

"4. **The period of wide reading to extend and enrich experiences and to cultivate important reading attitudes, habits, and tastes.** The essential purposes of this period are to extend the experience of pupils, to quicken their thinking powers, to cultivate a wide variety of interests and tastes in reading, and to lay the foundation for study habits. Instruction should also be provided to improve oral reading after habits of silent reading have been well established. This period usually includes the fourth, fifth, and sixth grades.

"5. **The period of refinement of specific reading attitudes, habits, and tastes.** During this period reading and study habits are refined in each subject as well as in the literature period. Wholesome interests in reading, the habit of reading current events and books and magazines of real worth, the sources of different types of reading materials, and standards of selection are emphasized. Appropriate instruction is provided in the junior and senior high-school grades."

The primary teacher is concerned chiefly with the first three of these periods of instruction. She wants to make sure that by the time the child has reached

the fourth grade he shall be impressed with the conception of reading as a thought-getting process, that he shall be able to grasp the meaning of simple passages quickly and accurately, and that he shall be able to understand and read well many kinds of reading materials. It will be helpful to consider specifically what steps the blind child must take in order that he may successfully complete each of the first three periods of reading instruction which are quoted above.

First Period: Period of preparation for reading. Problems. The two foremost problems of the first period are (1) supplying the children with the essential concepts about which they are ignorant and (2) energizing those youngsters who are contentedly inert. Both of these problems persist into the second and third periods of reading instruction, but it is during this first period that one can see the greatest reward for one's effort in trying to enrich the children's background and to awaken their latent vitality. The more effectively these two problems are disposed of during this pre-reading period, the better will be the pupil's chance of success when he begins the serious business of learning to read.

In order that the child's early desire to learn to read may be crystallized into a permanent love of reading, he must have had previous experience which is sufficiently varied to lend meaning to the words he reads. Every teacher knows that the child's richness in past experience has an influence on his interest in reading, but only the teacher of children whose experiences have been limited by reason of some physical handicap can realize what an important part is played by the every-day stimulations to healthy curi-

osity and thought. Much of this paucity of the blind child's past experience is unnecessary, yet it is the exceptional parent who realizes the necessity of making every effort to increase his child's limited stock of ideas.

The problem of stirring blind children to an interest in constructive activity is truly a difficult one. Many of them have been so pampered that they have had no incentive, nor even an opportunity, to develop initiative of any sort. A few have lost their native spontaneity through long or enervating illness. Whatever the cause, this lack of energy presents a difficulty which taxes the ingenuity of any teacher.

Another problem of the whole pre-reading period is how to develop habits of correct speech in children with functional speech defects, and in those pupils who are accustomed to speaking some foreign language. In almost every group of blind people one finds a large percentage who come from homes in which English is rarely used, and who, therefore, have difficulty in perfecting their speech. Even in those parts of the country where there are few foreigners, many of the children speak an extremely provincial English. As a result their oral reading is not easily understood and they do not comprehend very well the content of their books. There are also many blind children who have functional speech defects with no organic basis. If the instruction is of the right sort, much can be done, during this preparatory period, toward training the children for intelligible oral reading later. Further discussion of this question will be left for the chapter on phonics and speech correction.

The mechanics of braille reading do not make heavy

demands upon the teacher of the kindergarten and connecting classes. The few braille words and sentences given the pupils before they start the initial period of reading instruction must be read in such a way as not to interfere with the formation of regular reading habits during the next period, but this does not mean that the teacher must devote much time to drilling the children on the proper position of the fingers or the relation of correct posture to good reading.

A special problem in reading method is the training of pupils to think of wholes before they do of parts. It is inevitable that the blind, whatever their age or training, must build up wholes from the sums of their parts *more often* than do people with sight. Even in reading, the fingers never scan the pages of a book as quickly nor as well as can the eyes. Nevertheless, from the time he first enters school the average blind child *can* be taught to develop an attitude of *suspended judgment* on the parts until he has been able to put them together to form a true whole. The degree to which the child can think in large units will determine in great measure his interest in reading. The occasional pupil is satisfied with the purely mechanical process of recognizing each word as his fingers come to it, but this does not suffice for most children. If they are taught to hesitate and puzzle over letters and parts of words, their attention suffers, because letters and parts of words are not ideas in themselves.

Pre-reading program. The pre-reading program might well consist of these elements:

1. Story-telling by the pupils.
2. Story-telling by the teacher

3. Dramatization of both sets of stories.
4. Instructional games.
5. Free discussion.
6. Sight-seeing trips.
7. Recognition of frequently used words, phrases, and sentences.

Story-telling by the children serves more than one purpose. First of all, it gives the children practice in so expressing themselves as to command the attention of their classmates. This is good for them, for no more severe critics of children can be found than children themselves. It is an advantage to the teacher, in listening to the children's stories, to learn something about the extent of their individual vocabularies and their ability to use those vocabularies.

There are many different ways of making the story-telling hour constructive. For example, a teacher may suggest that each child think up the best story he can about the squirrel who worried because his tail grew thin. Since the attention of the listeners is likely to be fleeting, she must see to it that the first child to tell his story be one who has some ability in the art. By the time the first story has been told and discussed, it is safe to call upon a child whose imagination needs the prodding of the class. Throughout this story-telling the listeners should be instructed to watch for the most interesting points, for new words, or for the worst faults. Adverse criticism is so easily obtained that it needs little encouragement. As a rule, some genuine praise is necessary either from the children or from the teacher. The first consideration is to make the children feel at home while tell-

ing their stories; the second aim is to encourage the proper use of the children's imagination.

To accomplish these two ends the teacher often finds it helpful to allow the children to decide on a group of subjects from which their stories for the week may be chosen. The teacher must, of course, prevent the "lazier" children from repeating what has already been said by the others. For children of fairly normal intelligence, it is frequently helpful to divide the class into two groups, the one group to think up a subject which the other may weave into a story. For backward children, however, this co-operative story-telling requires more lively mental gymnastics than one has reason to expect of them.

Story-telling by the teacher should be used to prepare the child for the first stories in the primers. The children should be familiar with all the nouns and most of the adjectives which will appear in these stories; this end may be attained by checking up on the words the children do not know when the story is told to them. Some teachers prefer telling another story which employs the same vocabulary as the one in the reader. This is often a better method especially with bright children who tire of repetition. Children with less active minds, however, usually profit by finding a familiar word in a familiar setting, since it helps them to a quicker recognition of the braille form of the word.

The teacher may measure the pupil's comprehension by asking questions about the story, by having the children keep track of the words they do not know, by having one of the children tell the story and ask questions about it, or by other means suggested

by the individual tale. For instance, when the teacher has told the story of the Little Red Hen, the children may turn themselves into any of the animals mentioned, such as hens and cats and geese and pigs, acting the story out with additions or variations. The child who takes the part of the wheat sometimes needs a body-guard, however, because by the time he has been planted and cut and ground and made into bread he begins to feel somewhat the worse for wear.

Dramatizing, which appeals so strongly to practically all children, seems to be especially alluring in the case of blind and partially blind pupils. Although the possibilities of dramatization for blind children are almost limitless, we are at present concerned only with their application to the teaching of reading. Some of the story-telling done by the children and most of that done by the teacher should be planned so as to place emphasis upon new words and ideas which have been gained by the pupils on their educational excursions, in their use of the museum, or in connection with their other school work. Practically all of the stories and situations that are dramatized should be chosen for their usefulness in reinforcing new impressions.

Not only must the pupil be drilled on the names of things, but he must be helped to recognize the relationships between facts. The writer once overheard a spontaneous dramatization of her efforts of the preceding day to discipline a small boy who had apparently had no previous experience of the kind. The naughty boy was rehearsing his experience with much gusto until he reached the point at which he had said, "I ain't done nothing—what've I done?" Thereupon

the child who represented the accusing adult sarcastically remarked, "That's just it. You've done nothing you ought to do, all day." The naughty boy then stepped out of his part long enough to demand, "Say, what do you s'pose she meant by that?"

Children have a right to know the meanings of and the reasons for the daily happenings of their lives. Informal dramatization of every-day occurrences is excellent for clarifying them in the minds of the children. It is quite possible, however, to be overexplicit, and thus either to suggest doubts to the children or to make them inattentive through boredom. A couple of years ago Mr. A. R. Bannister, then of Swiss Cottage, London, published an article on arithmetic in "The Teacher of the Blind," in which he said:

"Whenever the children are likely to attack an exercise successfully they are the worse rather than the better for all preliminary explanations. The child should, in the first instance, endeavor to surmount for itself the difficulties of the example and the teacher's guidance should be reserved for those pupils whose work indicates weakness."

This advice has as much bearing on the teaching of reading as it does on the teaching of arithmetic. Because most of the children will need many explanations, it is easy to overlook the fact that the occasional superior child suffers as much from the tediousness of unnecessary interpretation on the part of the teacher as the others do from the uncertainty of incomplete understanding.

Instructional games should be invented to meet the exigencies of the moment. The "Why" game and the "Recognition" game are two which are interesting to

children and have high educational value. The "Why" game allows the teacher to ask a number of questions of the children without their realizing that they are being quizzed. It also gives the children an opportunity to ask questions of each other and of the teacher. Usually this game is more profitable if it is stopped whenever the questions become trivial. However, even the trivial "why's" are useful if they require an effort at explanation on the part of the child who must answer.

The "Recognition" game is more strictly a vocabulary game. The children identify actual objects by touch, they name objects that have been verbally described, they recognize others by their odor or sound, or they act out situations that are suggested by one or two words.

The value of a *free discussion* period depends somewhat upon the character of the class. Its usefulness may be nullified by the presence of too many scatterbrained pupils. Nevertheless, when it is properly guided, this "free" discussion period may contribute much to the child's knowledge of life and to the teacher's knowledge of the child. Brief periods once or twice a week, when the children are allowed to talk of their families and their toys, their likes and dislikes, foster real sympathy between teacher and pupils. They also help the teacher to find out what sort of training is particularly important for the individuals in her class.

"Sight-seeing" trips are much more necessary for children without sight than for those with sight; yet because of the difficulties of managing such trips for

blind children they are likely to be few. The trip may be only to the next lot to see the goat that grazes there, or to the fire-station to see the hook-and-ladder truck, but such trips should be frequent, and they should be repeated from time to time so that the children's impressions may be reinforced. It is to be remembered that impressions which are constantly renewed for children with sight, as they go to and from school or play out-of-doors with others, are not so revivified for the children who do not see. Most children see many goats during the course of the day, if they live where goats are popular; and they take many trips to the fire-station to see the trucks start off. The blind child may never be conscious that a goat is around unless he happens to hear it bleat. He may never have an opportunity to renew his brief acquaintance with a hook-and-ladder truck except by hearing it dash up the street. The number of repetitions necessary to fix new ideas in the mind of a child is much more easily obtained by the child with sight than by the child who lacks it. Conscious effort is necessary on the part of the adults around him if the blind child is to possess that variety of experience which should add meaning and interest to his first reading lessons. As broadening life experience gives vitality to reading, so reading in its turn will bring to the child a fuller and truer comprehension of life.

The connecting class offers a splendid opportunity for pupils to become *familiar not only with the idea of braille reading, but also with the tactual form of a few every-day words and phrases.* Following is a list of fifty words, arranged in phrases and sentences, which are heard constantly by any child in a school for the blind:

1. Salutations: Good morning. Good afternoon.
   Good day. Good-by.
   How do you do? Hello.
2. Pupils' names or nicknames.

3. Brief commands:

Sit	Jump	Walk
Run	Skip	Hop
Cry	Laugh	Smile
Roll over	Rest	Lie down
Stand up	Play ball	Throw the ball
	Find the ball	

4. Short sentences:

(a)	Ring the bell.	(b)	Open the door.
(c)	Close the door.	(d)	The ball is big.
(e)	A boy is small.	(f)	A man is big.
(g)	A girl is small.	(h)	A woman is big.
(i)	My sister is small.	(j)	My brother is little.
(k)	My sister is big.	(l)	My brother is large.
(m)	My father is —.	(n)	My mother is —.
(o)	I like candy.	(p)	I ate my candy.
(q)	The candy is good.	(r)	She ate my candy.
(s)	He ate my candy.	(t)	I like good candy.

Forty-four of these words occur in the first list of 500 words, and six of them in the second list, of Gates's "Reading Vocabulary for the Primary Grades." (Gates's vocabulary list is strongly recommended to every teacher of primary reading in schools and classes for the blind. At present, it is our best criterion of the vocabulary our pupils should possess by the time they finish primary work. These 1,500 words may be

nearly the maximum number in the dull child's reading vocabulary, but for the normal or superior child they should represent the minimum.)

Because of the limited vocabularies of most blind children at this stage in their school careers, the words in the above list have been carefully chosen so that they may deal either with the concepts which seem to be most familiar to blind children, or else with ideas that can be immediately and actively demonstrated. Unless individual pupils show interest in the spelling of these words no reference need be made to the letters. Most children will soon learn the shapes of the words and groups of words, and will thereafter be able to recognize them as wholes when they occur in the reading.

Second Period. Initial period of reading instruction. Problems. The perplexities which confront primary teachers of blind pupils are by no means foreign to the experience of other teachers; they are simply more compelling in schools for the blind. The most serious of these problems affect other phases of school life nearly as much as they do reading.

At the root of much of the lack of effort on the part of the pupils is that absence of the "will to learn" which has already been discussed under the First Period. Due to mistaken kindness by the many, and to selfish neglect by the few parents, a large percentage of blind infants are unfortunately restrained from normal activity, and are never allowed, much less urged, to learn such important things as how to feed themselves, to dress themselves, or to walk around without fear. Whether the parents' motives are selfish or unselfish, the result is a deadening of initiative which

is a most serious handicap to the development of these children. Some few of them respond quickly and joyously to the encouragement they receive when they enter school, but even among the brighter children there are those who seem impervious to any method which the teacher may employ in her effort to stimulate their interest in activity. The most important duty of the primary teacher in a class of blind children is to arouse these brighter children from the lethargy which binds them. As most classes for the blind are now arranged, it is not possible for the teacher to spend much time with the backward child who is possessed of this self-satisfied inertia, unless she neglects the brighter children who give more promise of responding to proper encouragement. Habits of any sort, once acquired by children of poor mentality, are very difficult to break, and the insidious physical and mental habit of inertia is the most difficult of all.

Motor clumsiness is a great drawback to blind children because their ability to acquire new experiences is so dependent on their skill in using their hands. They need manual skill, not only for reading but for getting meaning out of everything they touch. Sometimes motor awkwardness is the result of the parental neglect which we have already mentioned, but often children enter classes for the blind who are very clumsy in spite of the best home training.

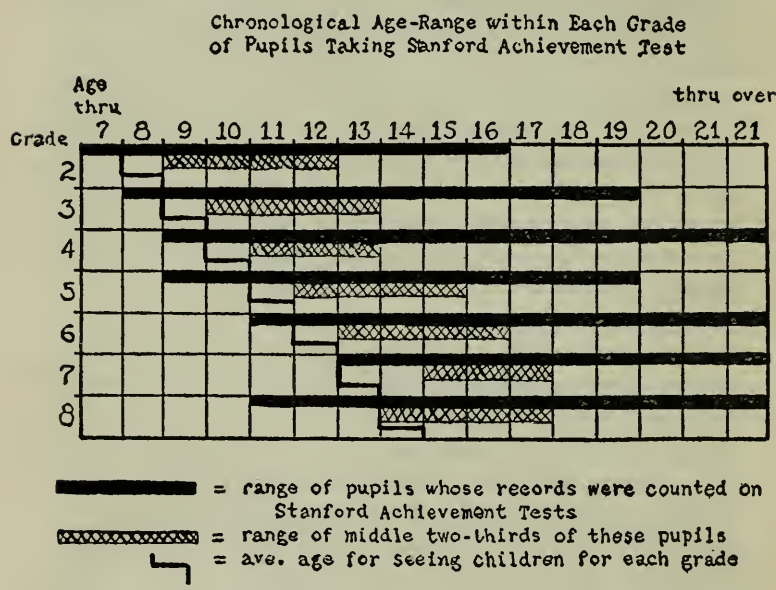
Except in the case of the extremely backward child and of the constitutionally inferior, proper training of the pupils in the kindergarten and the connecting class may do much to lessen the worries of the first grade teacher. Before the first grade, progress can be adjusted to suit the needs of the individual children

much more easily than after the regular grade work begins. Much will remain for the first grade teacher to do, however, no matter how much has been accomplished by the previous teacher.

One difficulty which is not so noticeable in the pre-reading period as it here is the "overageness" of many of the pupils in the class. These children are not only older than seeing children of the same grade; they also show a wide range of chronological ages within the same class. (The table on page 18 has been reproduced here from the writer's booklet on the "Adaptation of Educational Tests for Use With Blind Pupils" because of the vivid manner in which it draws attention to this problem.) And since blind children tend to be older than seeing children of the same grade, the content of the readers does not always interest them. That more of them do not find these stories uninteresting is due to the fact that they have developed more slowly, either because of dullness or because of lack of opportunity.

The vocabulary question is an ever-present one in the primary grades. Although training in the pre-reading period may have removed the most glaring deficiencies in the children's vocabularies, the children will often appear unaccountably stupid in their reading when the only trouble is that they do not know what they are reading about. Those teachers who rely almost entirely on oral reading will often be unconscious of the difficulty, because the children may learn to speak the words long before they know their meaning. On the other hand, the teacher who depends on silent reading will discover, as soon as she tests their comprehension, that something is the matter,

and should at once set out to remedy the difficulty. There is great need for an investigation of the amount and quality of the mental furniture which the blind child brings to school with him. After some adequate method has been devised for finding out what words the child knows, it will be easier to decide what vocab-



ulary training should be given. Incidentally, such a vocabulary study would be very helpful in teaching English to children who are accustomed to hearing some other tongue.

With the beginning of braille reading another problem appears on the teacher's horizon—that of keeping the partially seeing child from using his eyes in reading and writing. In most schools for the blind there

are a few children who read print with considerable ease. It is a debatable question whether the majority of these should not be allowed to read books with large type in place of braille. The temptation to read the latter with their eyes seems to be almost irresistible, and ink print certainly cannot be worse for the eyes than is braille. The majority of the children who read braille with their eyes are jeopardizing the little vision they still possess.

Many methods have been tried for keeping partially seeing children from forming this habit. Occasionally a pupil can be put on his honor. Some unusual teachers have succeeded in making finger-reading so interesting to these children with partial vision that they become proficient in it and so have slight desire to use their eyes. Nothing can take the place of self-control on the part of the pupil who is tempted to read with his eyes, but there are a few mechanical devices which have at times been found helpful. Some teachers use a long bib which is tied around the pupil's neck and thrown over his book and hands. Others merely throw a cloth over the book and hands. The objection to both of these methods is that they interfere, to a greater or less degree, with the free movement of the hands over the page, and that they keep the teacher from observing the position of the pupil's hands as he reads. Once in a while a child is restrained by wearing spectacles, the lenses of which have been covered with dark paper. The inverted shield which is sometimes used is bad for two reasons. First, it is so uncomfortable as to distract the pupil's attention from his reading; and second, since the child can see nothing below the level of his chin, he becomes interested in what is

above that level, and so loses track of what his fingers are reading. Reading in the dark is another method of overcoming eye-reading which has aided more than one child to become a finger-reader. This is probably the best method available for training a partially seeing pupil to read with his fingers. The temptation to look at the braille is removed, and the attention can be centered upon the fingers. The danger in this method lies in the difficulty of observing the child's reading position.

Since many problems arise in nearly every primary class of blind children, valuable time is saved if the teacher at once groups the children according to their several abilities and disabilities. It may seem difficult at first to carry on two or more different reading lessons, but it is still more difficult to have the class break up into groups in spite of one's best efforts to keep it united. If the teacher herself deliberately makes the groups in the first place, then she is in control of them. If the class breaks up into groups voluntarily through differences in ability and in interests, the teacher always seems to be resisting the trend of affairs, and is never quite prepared for what may happen next. She is worried over how to make Johnnie catch up with the others, or why Alice is losing interest in reading when she should be the best in the class. Breaking the class into groups may cause more work, but it will result in more interesting work for both teacher and pupils because it makes it possible for each child to progress as rapidly as he is able.

Program of the initial period. There are five chief aims of this initial period of reading activity: (1) To strengthen the interest in reading which has been

carefully fostered in the kindergarten and connecting class; (2) To fix firmly in the minds of the children the idea that reading is primarily a thought-getting process; (3) To establish proper mechanics of braille reading; (4) To develop a fair degree of speed and accuracy in the reading of simple passages; (5) To furnish as many experiences as possible with every-day situations so that the child may develop a vocabulary adequate to make his reading intelligible and to enrich his mental life.

Perhaps the most important element in the development of interest in reading is an active interest in reading on the part of the teacher concerned. The teacher of reading who is not herself a booklover is under a disadvantage at the very start of her teaching program. She lacks the drive which sincere enthusiasm gives. Next to the teacher's own interest the most important method of fostering whatever eagerness the child developed in the previous class is the continuation of the story-telling and dramatization of that period. The oral composition by the children of short stories and rhymes which are written down by the teacher gives another incentive to reading. Every child is anxious to read what he himself has composed, and as a rule the other children are anxious to read it, too. Extending to the children the privileges of the library table as soon as they have learned to read independently often works like a charm. Pictures play an important part in catching and holding the attention of seeing children; substitutes must be found for the blind in the museum of familiar objects, in constructive play which involves reading, and in opportunities to gain actual experience with living things

in their natural habitats. This type of training must be continued at least through the primary grades.

In order that the children may understand reading in its true character as a thought-getting process, considerable emphasis must be placed on silent reading from the first. Just how much silent reading should be done in the first grade is a matter which is not yet settled. In a class for the blind there is at least this justification for having more than fifty per cent of the formal reading oral in character—the difficulty in the preparation of braille silent reading test material. As soon as possible, however, the amount of oral and silent reading should be approximately equal. Oral reading is such a poor measure of comprehension that silent reading is necessary from the first. As has already been said, blind children are inclined to let others do the thinking. It is of particular importance that they be encouraged to think for themselves by learning how to read silently and with a purpose. For the same reason great discretion should be used about reading to groups of the children without obliging them to listen *actively.* Until she has grown wise in the ways of blind children, the teacher may yield to the subtle flattery of a silent group of youngsters apparently hanging on her words. It is rather disheartening, however, when she surprises them with questions on what she has read, to find that some of her audience were present in body only. Blind children are easily hypnotized by the sound of the human voice running steadily on, and the apparently attentive child may be day-dreaming, sleeping, or doing nothing at all. One must admit, however, that a certain amount of evening reading is not only desirable but necessary in residen-

tial schools, and that during rainy days and in periods of quarantine reading is a great blessing in the hours of enforced leisure.

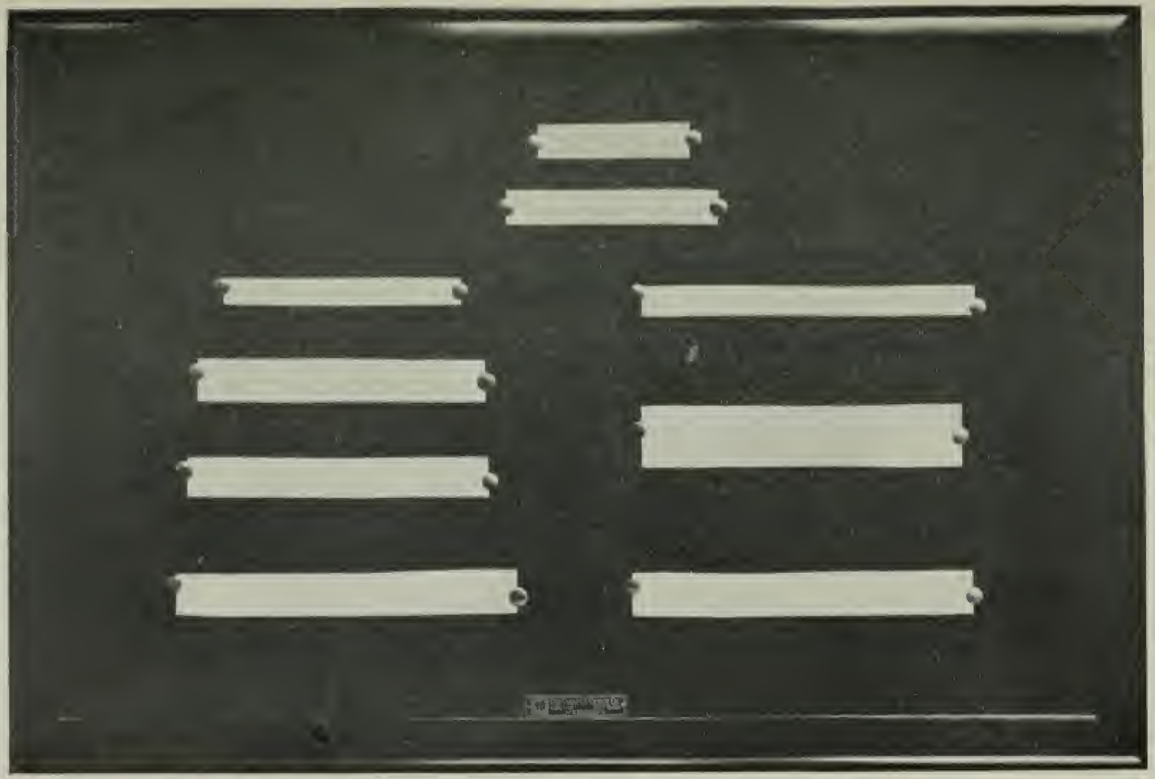
When the teacher reads aloud to the children she usually chooses recreational books, such as animal stories, fairy tales, improbable adventure stories, and other fanciful material. Most of the primer and first reader stories are of the same imaginative sort. It is, therefore, wise to use the "work type" of material as much as possible in all other class reading. One of the most effective schemes to use at the beginning of this initial period, and indeed all through it, is to label everything possible with its braille name or with descriptive phrases and sentences. This labeling goes far toward making up to the blind child for the lack of pictures. The teacher of seeing children employs pictures of every sort and description to fix the meanings of words and phrases in the minds of the children; the teacher of blind children must find some adequate substitute for this use of pictures. The use of labels acts as such a substitute. Numerous games may be built around them. One which may serve as a test is that of "Hunting the Labels," each child reading the labels he finds, a prize being awarded to the child who finds the most labels, provided he can read them.

The class bulletin board is a popular vehicle for the "work type" of reading experience. It is especially useful when the children are learning how to write, since announcements to be posted make excellent writing lessons. Opposite page 24 is an illustration of such a bulletin board for Grade IA containing the notices which are given below:

(1) Grade 1A.
(2) October 11, 1926.
(3) Close the door softly.
(4) The first grade is noisy at recess time.
(5) John will let a good boy take his drum.
(6) At recess time you will find something good in the treat-room.
(7) Who wants to start the log house?
(8) In the oral reading class find out who reads best. Be ready to tell the reason why.
(9) Louise may write the date of the next school day and post it here.

Completion sentences based on common experiences of life or on familiar stories furnish an excellent means of checking the pupils' comprehension. The words necessary to complete the sentences may be given orally by the pupils, picked out of a pile of word-slips, or written, if the children have had sufficient writing experience. There are a few good reading games which can be easily adapted for use with blind children, but, for the most part, the sentences should be invented by the teacher to fit the needs of the moment. Considerable thought is necessary if such sentences are to fulfill their purpose.

An instructive occupation which is a delight to almost every child is the reading of riddles, the solution of which requires knowledge of important words. "The Riddle Book," by Lily Lee Dootson is recommended to every primary teacher. It is entirely made up of riddles based on material with which primary children should be acquainted. It is a supplementary book, and is not supposed to be read through. Sometimes riddles



Class Bulletin Board

similar to these might be composed by the teacher or by the children themselves.

Another method of training the pupils to read for some definite purpose is to give each child a slip with a braille question on it, the answer to which lies in the pages he is to read. The discussion of these questions after the reading is over will not only show whether the children have found the answers to their own questions, but will also disclose how much of the whole selection they have understood.

Since Chapter II is devoted entirely to the discussion of the mechanics of braille reading, little need be said about them here. It is sufficient to point out a few of the main facts. The pupils should probably be taught to read with both hands from their first braille lessons in the connecting class. Many children profit by practicing with each forefinger separately as well as with both together. If it happens that the children are taught to read with one forefinger only, then care should be taken not to interfere with persistent left-handedness. If a child is decidedly left-handed, it is dangerous to insist that he become right-handed, since such a change frequently is responsible for speech defects, for motor clumsiness, and for extreme retardation in grasping the meaning of printed words. Even though most children can read equally well with either finger, there are practical reasons why children who read with only one finger should use the right rather than the left forefinger, the most obvious of which is that books open on the right. Pupils should also be made to realize that posture has a real effect on their reading efficiency, and that the teacher does not harp on good posture simply to be irritating. A slanting position of the finger should be insisted upon with

most children, and any up-and-down movement of the finger-tip should be discouraged.

Slowness of reading and poor comprehension may have any one of a number of causes. With some children a creditable degree of speed and accuracy is difficult to obtain because of their tendency toward inertia. Mere urging that they read more quickly and pay better attention has little effect on these children, since they have no desire to improve and since they do not know how to do so without more explicit assistance. Grouping children according to their reading abilities does much to prevent the formation of indolence in reading. Speed drills and tests are good for all pupils. This is not easy with blind beginners, but is, nevertheless, important. Very short time tests are not practical, as a rule, because of the clumsiness of braille books and slates. Many precious seconds may be lost by one child in trying to find his place, while his more facile neighbor may have covered two or three lines of the test. The brief time tests are, therefore, likely to become partly tests of manual dexterity rather than entirely tests of reading. Tests which take five minutes or more do not rattle the clumsy children as much and are more accurate to score. For drill purposes, the shorter tests are not so bad.

Throughout the school life of the blind child an effort should be made to see that he has every opportunity for increasing his vocabulary. This is not that he may seem more learned, but that he may stock his mind with the material out of which thoughts are made and culture grows. For most pupils a multiplicity of experiences alone will not add much to the quality and value of life. Although a few are so hap-

pily constituted as to require little guidance in the arrangement of facts into meaningful wholes or toward seeing relationships between facts, most children must be shown how to interpret and analyze one set of experiences in terms of past experiences.

From the Twenty-fourth Yearbook of the National Society for the Study of Education is taken a list of "The Commonest Words in the Spoken Vocabulary of Children Up to and Including Six Years of Age." (See pp. 186 ff.) By testing the child's knowledge of the words in this list, as well as his comprehension of words having to do with people, things, and events around the school, the teacher will acquire some understanding of the special limitations of the pupil's vocabulary. Whatever methods are used for adding to the children's word-knowledge, the importance of vividness and repetition must always be borne in mind. The writer distinctly remembers her admiration for a teacher who overcame an intense dislike for snakes and toads in order that she might show her class of third grade boys what living snakes and toads were like. Their lessons with those wriggling, hopping, living specimens made a deeper and more lasting impression on the boys' minds than any amount of work with stuffed models could have done. Such self-control could hardly be demanded of every teacher, but this teacher's method of bringing her pupils into contact with new ideas might well be employed in other more agreeable ways.

With the Twenty-fourth Yearbook word list to tell us what words the child should know by the time he enters the initial period of reading instruction, then with Gates's Primary Vocabulary List to inform us

as to what other words they should know before they are through with this period, the teacher can build her program and develop her projects according to the needs of her particular class. The words used in the supplementary material which she puts into braille should come chiefly from these word lists. Another extremely serviceable list is the Thorndike Word List. When work in spelling begins, it is much more important that the spelling words be chosen from the words in these three lists, than that they belong to any family of words or to any set lesson in a spelling-book.

A most satisfactory way of adding to the pupils' vocabularies, of galvanizing them into thinking, and of lending interest to their reading and writing, is to develop projects which demand physical and mental action. In Chapter V will be found a list of projects which demand activity on the part of the children. The materials which are not at hand, out-of-doors and within the house, may well be added to the museum of familiar objects.

Third Period. Period of rapid growth in fundamental attitudes, habits, and skills. Problems. The problems of this period are the same as for the preceding one, with some slight shift in emphasis, and with one or two additions. Until very recently one of the biggest problems for the teacher of this period was to find enough suitable material in braille. This difficulty bids fair to disappear within a few years, since publishers of braille material are now able to supply more juvenile books in Full Spelling and in Grade One and a Half.

Another problem which confronts the teacher during this Third Period is to know when to introduce con-

tractions. One excellent teacher may insist that this be postponed until the fourth grade, whereas another, equally capable, is sure that some contractions should be taught before the end of the first grade. On the whole, the best place for learning contractions seems to be in the second grade.

Program of the third period.

The chief aims of this period are: (1) To further strengthen good reading mechanics; (2) To further increase the children's sight vocabulary to include all of the words on the Gates list; (3) To increase the speed and accuracy of oral reading; (4) To increase the power of reading silently for a definite purpose and for general comprehension; (5) To further enlarge the children's experience.

The children should attain a fair degree of proficiency in all of these lines before they enter the fourth grade.

In order to hold the children's interest in reading and to fix in their minds the idea that reading is something which they cannot do without, it is necessary to have a quantity of attractive material dealing with informational as well as with recreational subjects. A glance at the catalogs of publishers of braille material gives one the impression that there is already sufficient material in braille for the second and third grades. If it were possible so to standardize children's interests that all would enjoy every book that is in braille for their grade, then possibly the supply of second and third grade reading matter now available *might* be ample. Since this is neither possible nor desirable, however, it is still necessary for teachers to spend much time putting suitable material into braille, if

their classes are to be properly supplied. There are two objections to such an occupation on the part of the teacher. One is that it takes time which she should be devoting to other matters; the other is that her braille is likely to be imperfect. It takes special training to write perfect braille, as anyone will testify who has taken a hand-transcriber's training course. In the upper grades minor inaccuracies in braille are not so serious, but in the primary grades they tend to make hazy and inexact just those touch impressions which especially need clarifying. However, as things are now the teacher often has no choice but to spend many hours with a braillewriter.

A book which should be widely used during this period of reading experience is Book I of the Learn to Study Readers, which may be obtained from the Howe Publishing Society of Cleveland, Ohio. It is one of the best informational and study readers in print, and is well adapted for use with blind children. In the bibliography at the end of this book will be found the names of other silent readers which, although not in braille, furnish good material for hand-transcribing.

In order that speed and accuracy of reading may be checked carefully, standard and informal tests should be given at frequent intervals. Oral reading tests should be modeled after the Gray Oral Reading Check Tests, and the silent reading tests should be modeled after those that appear in the Learn to Study Readers. The Gray Oral Reading Check Tests can be given at five different times throughout the year for the purpose of more accurately recording the pupils' oral reading progress. The Stanford Achievement Test Reading Examination can be used with second and

third grade children who have a sufficient knowledge of writing, for the purpose of finding out how they stand when they enter the grade and when they leave it.

These tests can be used as an incentive to better reading. Other more potent incentives are the familiar ones of audience reading and dramatizing. One opportunity for audience reading which cannot now be exploited as much as would be desirable is that afforded by the evening reading hour. If there were a sufficient number of juvenile stories in braille which are not generally familiar, then individual children might be given the great privilege of preparing such stories to read to the rest of the group.

Before the end of the third grade fully 75% of the time which is definitely set aside for reading should be allotted to silent reading. Additional practice in silent reading should be obtained in connection with other subjects. The use of library books should be encouraged. The teacher should still read to the children occasionally, to stimulate their interest and keep before them a good example of oral reading.

Time allotment for reading. There is at present no agreement as to the amount of time, or the proportion of the total school time, which should be definitely spent on reading. The table given below is quoted by Brooks in his "Applied Psychology of Reading" from a Seattle Public School Bulletin by F. C. Ayres. This table shows the average number of minutes per day which are actually devoted to reading. When the subject of reading is better taught, and as it is more closely correlated with other subjects, it may prove unnecessary to devote so much time to

reading as an independent subject, although at present the time allotments given in this table are not at all high for primary classes in schools for the blind.

Perday (p. 31)

Average Time Per Grade and Percentage of Time Devoted to Reading in 49 Cities of over 100,000 Population. (F. C. Ayres)

Grade	Average Number of Minutes per Grade	Percentage of Total Time in Elementary-School Curriculum
I	84.2	32.6
II	80.8	28.6
III	66.4	22.2
IV	49.0	16.0
V	36.4	11.8
VI	28.2	9.2
VII	28.4	9.0
VIII	27.2	8.7

Summary: Thirty-five years ago the "teaching of reading" signified to most educators only the oral drill in the reading period, on letters, syllables, and words, and on those inane remarks which made up the pages of the first readers. The second readers were not so bad, and the third readers were usually fairly interesting. Most of the reading was done orally, because of the mistaken idea that comprehension could be judged only by the pupil's fluency, speed, and inflection when he was reading aloud. Thirty-five years ago the connection between the formal teaching of reading and the other school subjects was not entirely appreciated. To-day, a great deal of the instruction and drill in reading is obtained through work on other subjects. As to the relationship between the child's past experience and a good start in reading—the first-grader was not supposed to have *had* any past experience by which to be affected. Thanks to the child

psychologists and to the educational research workers of the last quarter of a century, there is now a better understanding of the intricacies of the reading problem. This is particularly true of the teaching of primary reading. Since there is still much for us to learn about this important subject, it may be that some of the guiding principles of to-day will be discarded to-morrow. Nevertheless, great progress has been made—progress that affects the world of blind children more than it does any other group except the deaf.

It is a long step forward to realize that many children never become interested in reading, nor profit by it, because of a lowered mental and physical "tone" which holds them back from all effort. To-day, instead of calling these children lazy, the teacher exerts all her resources to arouse these passive, languid youngsters into wholesome activity. A few ways of accomplishing this have been suggested in the discussion of the three primary reading periods.

According to the Twenty-fourth Yearbook of the National Society for the Study of Education, the reading program should be divided into the following periods of instruction: (1) the period of preparation for reading; (2) the initial period of reading instruction; (3) the period of rapid progress in fundamental attitudes, habits, and skills; (4) the period of wide reading to extend and enrich experience and to cultivate important reading attitudes, habits, and tastes; (5) the period of refinement of specific reading attitudes, habits, and tastes. It is the first three of these reading periods which directly concern the teacher of primary reading. The problems of each have been dis-

cussed, together with their chief objectives and the means for obtaining these objectives.

Vocabulary studies, of readers and of children, form a recent contribution to the teaching of reading which is especially useful to the teacher of primary braille reading. Because of the paucity of environmental influences, blind children have very uneven language attainments. In order that the children may have the proper vocabulary background for their training in reading, it is important that they be given training which will remedy their deficiencies in word-knowledge, as judged by their understanding of the words in the vocabulary lists for their grade. In order to give them the necessary basis for the comprehension of facts, things, and relationships, "sight-seeing" trips and a museum of familiar objects have been suggested.

Although the mechanics of braille reading should be well mastered by the end of the third reading period, little has been said of them here because Chapter II is entirely given over to this topic.

We have suggested that approximately half of the time devoted to reading in the second period should be spent in silent reading, and that more than three-quarters of the time in the third period should be so spent. In order to check the pupils' comprehension of what they read, the labeling of objects, riddles, completion of sentences, and reading games have been mentioned. Time tests should be given frequently to serve as incentives for increasing both speed and accuracy of reading.

A passive attitude toward reading, whether by the teacher or the pupils, should be avoided and discour-

aged as much as possible. The children should be taught to read and to listen with a purpose.

If the reading problem is a complicated one for primary teachers in schools for the seeing, it is even more so for teachers of primary braille reading. The ramifications of the reading problem in schools for the blind are so widespread that the solution of this problem will insure the solution of many another important problem.

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CHAPTER II.

Mechanics of Braille Reading.

Many children learn to read despite the use of poor reading mechanics. Nevertheless, there is little doubt that the majority of children would read more extensively and with more interest if they were so well trained in the best mechanics of reading that their use of them was automatic. This is certainly true of braille readers, since touch reading demands the use and co-ordination of muscles in many parts of the body. For this reason, the proper technique of reading should be of utmost concern to every teacher of primary braille reading. She should not be content with knowing what good braille mechanics are, but should try to understand what lies behind some of the poor mechanics which many blind children seem to prefer.

Every teacher of primary braille reading is urged to learn to read braille with her fingers, not because she can thus literally put herself in the position of a blind child, but because it will greatly help her to understand some of the vital points of braille reading which concern not only the congenitally blind braille beginner, but also the newly blinded adult who is becoming a finger-reader. The idea that finger-reading is impossible for seeing people has been empirically disproved by the many individuals with sight who have voluntarily read braille with their fingers. The difficulties in the way of finger-reading by intelligent seeing people are psychological ones, such as persis-

tent visualization of what is being read, impatience at the slowness of the process, and—let it be whispered—mental inertia. Because of their previous training in reading, it is usually easier for adults to learn the braille alphabet before they learn the whole-word forms. If time permits, it is better to learn the letters with the fingers *before* learning them with the eyes. In this way visualization is less likely to interfere with the learning process. After the alphabet has been learned, finger-reading is made much simpler for the person with sight if he reads his braille in the dark. Some people report that braille reading is an excellent cure for insomnia.

The teacher who has learned to read braille with her fingers will have a better understanding of and a greater sympathy with the blind child's struggles in acquiring good reading mechanics. She will know from experience the folly of trying to make the letters more distinct by bearing the finger down more heavily upon the dots; she will learn from her own experience of nervous tension how important for prolonged reading is relaxation and good nervous control; she will also understand why children who are taught the dots and letters before words have a tendency to move the finger with a marked up-and-down motion. In short, she will develop an apperception which will lend force and character to her teaching.

Relaxation of the whole body is almost essential for continued reading over a long period of time. A pupil may become an excellent reader yet be unable to *enjoy* braille reading because he is too easily fatigued. Except among that group of youngsters who are mentally and physically inert, extreme nervous tension is

one of the most serious handicaps of blind children. It is responsible for many of their tics and mannerisms, it limits their powers of concentration on any task, and it results in nervous exhaustion which makes it difficult for them to progress evenly through school or to work continuously after they leave school. To these tense, easily overwrought children it is useless to urge relaxation in reading if it is impossible for them to relax even in sleep. Every effort must be made to dispel the fears which are a chief cause of this tension, and to develop confidence in free movement and in free play. For these children many opportunities for self-expression, such as are afforded by classes in eurythmics, dramatization of activities, supervised out-of-door play, and even speech training and corrective gymnastics, are not only desirable but are necessary for their future development as normal children. This is important if they are to find any enjoyment or comfort in reading.

Many blind children who are not usually nervous tend to become so when they are reading. These children are making fine muscular co-ordinations which, if these were not required by the very nature of finger-reading, probably would not have been expected until the children had had greater experience with the coarser movements. This results in strained attention, which in its turn brings a tenseness of the whole body and particularly of the hand and arm. Although excessive nervousness may cause a temporary sharpening of the perception of pressure stimuli, it soon brings an exhaustion which causes a dulling of the perception and a consequent decrease in the accuracy of the movements of the muscles of the upper arm, the shoulders,

and even of the back and abdomen. Relaxation during reading is, therefore, most important if one is to find interest and pleasure in the process. A useful scheme for reducing the tension of the children is to give stretching and relaxing exercises before, during, and after the reading period. These exercises should include stretching and flexing the fingers and wrists, and should call for deep and rhythmical breathing. They should be used during the reading period only in case the children show that they are becoming too tense to read with profit. Care must be taken to avoid suggesting nervousness and rigidity to the children.

One sure indication of undue tenseness on the part of the child is the whitening of the finger-tip caused by excessive pressure on the braille. This *pressure of the finger-tip* is bad not only because of the nervous strain it induces, but also, from the point of view of reading efficiency, because it blurs the perceptions of pressure and makes reading more, rather than less, difficult. This does not mean that the child should never press down on the braille more firmly than usual when he cannot distinguish the dots sufficiently to read the word. Increased pressure may momentarily intensify the sensations of touch, but continued pressure will dull them and will, therefore, decrease the accuracy of the child's interpretation of what his finger touches. Unfortunately many teachers who have not understood the character of the "sense of touch" have encouraged their pupils to bear down heavily on the braille with the mistaken assumption that such pressure would improve their comprehension. Any teacher with sight who still feels that such firm pressure is necessary is urged to try the experiment of reading

ten lines of braille with the finger gliding lightly over the tops of the letters, and then ten lines more with the finger pressing heavily down on the page. The results will be still more convincing if the experiment is reversed, since the improvement in the perceptive ability of the finger is very noticeable when the tense pressure is released.

The "sense of touch" is, more accurately, the synthesis of sensations from a number of senses. The organs of pressure, temperature, and pain are certainly involved, and probably a large part is played by the kinesthetic sense. For the teacher who reads German considerable light will be thrown on the nature and function of the "sense of touch" by a study of Professor Karl Bürklen's article, "Das Tastlesen der Blindenpunktschrift." (See Bibliography.) In the same volume with Bürklen's article there is also an account of an interesting experiment by Grasemann called "Eine Untersuchung über das Lesen der Blinden." Little experimentation has been done which has been reported in English, but in Schafer's Text-Book of Physiology, Vol. II, an article by C. S. Sherrington gives a valuable discussion on the subject of touch and pressure which is especially pertinent to the understanding of the mechanics of braille reading. As a result of experiments, which have been conducted chiefly in Germany, there is sufficient proof that the finger interprets better what lies under it if it does not press down too hard upon the object which is acting as a stimulus. Although the organs of pressure can be stimulated only by a deformation of the skin sufficient to bring the sense organ into direct or indirect contact with the stimulus, the amount of

deformation required to arouse the organs of pressure in the finger-tips is very slight. Too great pressure causes the deformations to overlap. This overlapping is probably responsible for a confusion of sensations which results in the inaccurate perception of braille dots and letters when the fingers press down too heavily on the dots.

The perception of the braille dots is affected by other factors as well as by the pressure of the finger upon the page. The *shape and height of the dots* have been found to influence the character of the reading process and the degree of enjoyment experienced by the reader. Different shapes of dots have been tried with the result that a slightly rounded dot has been adopted by most of the leading embossing plants. Too pointed a dot is overstimulating to any but the most calloused finger-tips, with the result that it soon fatigues the pressure spots and irritates the pain spots. A flat dot seems to spread the sensation, resulting in an indefiniteness which makes accurate reading difficult. A rounded dot, shaped like half a cone, is the most generally efficient.

During the last two years some experiments have been conducted for the purpose of discovering the *relative efficiency of different heights of dots.* The experiments were made in order that embossers of braille literature might know how low a dot could be used without decreasing the legibility of the braille. A dot which was .025″ in height was chosen as the highest dot in the experiment, because few embossers in this country use a dot that is lower than this. The two other dots were placed arbitrarily at .022″ and .018″. Few dots are printed anywhere that are lower than

.018″. The results of the experiments with these three heights of dots were particularly interesting in that, although most of the subjects of the experiment rarely had occasion to read braille of which the dots were less than .025″, more than two-thirds of them read the lower dots more accurately and more rapidly. Those conducting the tests remarked on the frequency with which readers who declared a preference for the highest dot actually did better on one of the lower dots. The importance of not overstimulating the organs of touch in fingers which have not yet become calloused was noted as a secondary result of the experiment.

All the subjects of these experiments were experienced readers, and most of them were over twelve years of age. If subjects whose fingers were already somewhat calloused could read more readily a height of dot that afforded less acute stimulation, is it not probable that the high dots used in this country are so irritating to the more tender skin of the blind beginner that reading may be a pain rather than a pleasure, and the ultimate acquisition of the reading habit jeopardized? The organs of pressure in his finger-tips are so overstrained that he soon tires and his attention wanders to other things. It would seem well worth while to try the experiment of shifting the struggling primary pupils from books printed with .025″ dots to others with lower dots—possibly as low as .018″.

Many teachers have felt that *braille lines should be far apart* for the young beginner. The line spacing recommended by the Uniform Type Committee was .400″, and that spacing has been adhered to by the braille presses in this country for general embossing.

This distance seems to be just great enough to permit the easy passage of the adult finger from the end of one line to the beginning of the next. Because of the uneven movement with which the fingers of the beginner travel across the page, it is possible that the lines in the first pages of braille should be more than .400″ apart. It is the conviction of the writer, however, that the use of a wider line spacing should not continue many months, since it probably retards the children's progress in forming efficient muscular habits. It is also very likely that to the smaller fingers of the child a spacing of .400″ seems much wider than it does to the larger finger of the adult. As there is no conclusive evidence for or against the use of a wider line spacing, the teacher will depend upon her own judgment as to its efficacy in teaching blind beginners. With some children it is undoubtedly helpful to use it for a brief period of time. Other children apparently are not in need of this preliminary step to the use of the regular line spacing.

If the child shows a tendency to slip from one line to the other on regularly spaced braille, as his fingers travel across the page, it is probably a sign that he is developing an up-and-down motion of the fingers which brings his finger-tips into closer proximity with the first dots of the line below. It may also indicate that he is too indifferent to try to keep his fingers running smoothly from left to right, or that he is too tense to control his fingers properly. Or it may mean that he has not been taught the greater importance of the upper dots of a word as compared with the lower. The majority of the dots in any word are likely to be in the two upper rows. All the letters of

the alphabet have dots in the first two rows, whereas only the last sixteen have dots in the third row. For this reason, the child should be trained to observe the tops of the words with more care than he does the bottoms of them. If his finger strays to the lower half of the words, where dots are scarce and irregular in occurrence, he loses the sense of what he is reading and so is not aware when he has slipped down to the next line. When children need drill on separate lines, it is suggested that this drill be given them on word and sentence cards, or on separate slips of paper, so that they will have experience with only the same line spacing as that in their books.

We must still consider the child whose reading technique must differ from that of other children because some personal peculiarity makes it impossible for him to follow the rules which apply to the majority. Usually, however, it is safe to insist that the *child's reading fingers shall form an acute angle with the plane of the page, which brings the pulp of the finger into sharpest contact with the top row of dots yet allows slight pressure on the third row.* When the Uniform Type Committee made its extensive experiments on the mechanics of braille reading, it found that 85% of the slower two-thirds of their 1,200 subjects, and 90% of the faster third, held the reading fingers so that they formed a narrow acute angle with the plane of the page. There seems to be little doubt that this is the most efficient position for the fingers. These subjects were all experienced readers. It seemed desirable to ascertain how primary pupils also held their fingers when they were not conscious of being observed. Of seventeen children thus observed,

thirteen held their fingers at the proper angle, two held them almost at right angles to the braille, one held the fingers almost flat on the page, and another held one finger as nearly flat as was possible and the other at the usual angle. Of the four who varied from the customary slanting of the fingers, one had a very poor sense of touch, and another is suspected of having dulled touch perception. Most children seem to assume the proper slant to the reading fingers of their own accord. Some children, however, must be shown the proper angle and must be convinced of its superiority over a right angle or a flat position of the fingers.

Which hand to use in reading braille and whether *to use one hand or both* are questions which have been frequently discussed. They have also been the subject of considerable experimentation. It will be helpful to consider briefly a few of these experiments. Of 1,200 people who read for the Uniform Type Committee, 579 used both hands, and 43% of these were found in the fastest third of the whole 1,200. In 1925 the writer gave the Uniform Type Committee test to 50 adult readers for the purpose of discovering if the lapse of some thirteen years had brought changes in the percentages obtained by the Committee on this point as well as on others. The subjects of the 1925 experiment were chosen to include people who read little and those who read much, those who were manual workers and those who did little to harden their finger-tips. Of the faster half of this group only three did not use both hands in reading, whereas in the slower half there were ten who used one hand only. Of the fastest fifty of this group, only one person did

not read with both hands as against five in the slowest fifth.

Although the number of errors per person ranged from none to thirteen, 45 out of the 50 readers had only one error or none at all. It is obvious that a study of the errors on this particular test can contribute nothing toward a decision as to the relative efficiency of one-handed or two-handed reading.

Since the foregoing experiments had been made on adults, further experimentation was needed to inform us how children read when they are free to do as they choose. It is almost impossible to find a group of blind children who have received no directions at all as to how they should use their hands. The best that could be done at the time was to pick a group of children from grades four, five, and six who were said to have been left free to read with one or two hands, as they chose, for more than a year. It was found that only three out of the twenty-two pupils read with only one hand. One of these three was a confirmed eye-reader who followed her right finger across the page with her eyes, the latter doing the actual work. Another of the three was a finger-reader who had recently been converted from eye-reading, and the third was a boy who was still classed among the "dormant" although he had begun to show signs of life.

In the experimental class of beginning braille reading at Perkins Institution for the Blind, the children have been taught to use both hands from the first, but have been allowed to change to one hand if they wished to do so and the change seemed justified by their achievement in reading. Although a more careful study of this matter will be made in the near

future, the results so far obtained seem to warrant us in encouraging new teachers to follow this policy.

Experiments made in Germany agree with those of American and English investigations in showing the decided superiority of two-handed over one-handed reading. (See Bürklen, *Das Tastlesen der Blindenpunktschrift.*) They disagree, however, on the question as to which hand a one-handed reader should use. The Germans have considerable evidence to show that the left forefinger is consistently better for touch reading than the right. The Uniform Type Committee found that of the small number of left-handed readers whom they met, only 19% were in the faster third of the 1,200, whereas 32% of the right-handed readers were in the upper third. The difference probably results from the differences in the methods of experimenting. It seems probable that, if a child cannot learn to read with both hands, he should be trained to use the right hand unless he is definitely left-handed. At present it is considered dangerous to force a left-handed child to become right-handed, since such changes often result in nervous disorders of which functional speech defects, such as stammering, are the most noticeable. In the light of the German evidence in favor of left-handed reading, it would hardly seem worth the risk which is attendant on forcing persistent left-handed readers to become right-handed.

Both right-handed and left-handed children can read with two hands at once, but most children can read well with either hand. Because of this, and because it is a distinct advantage for pupils who reach high school to be able to read with either hand or with both, some informal experimenting has been done in

teaching children to read with each forefinger separately and then with both together. The few pupils who have tried this have enjoyed it, and have seemed to improve in the quality of their two-handed reading. There is, however, no definite proof that this is a wise procedure to follow with first-graders.

Considerable space has been given to this discussion of one- or two-handed reading, because many teachers have expressed doubt as to the best method to follow and have asked for suggestions. It seems to be a natural tendency on the part of the teacher to place only the child's right forefinger on the braille when she finds it necessary to direct his fingers. Even though she is not definitely training him to read with the right hand only, this policy encourages and indirectly suggests that method to him. The writer has caught herself doing the same thing a number of times in spite of her preaching to the contrary. Those teachers who believe in training the pupils to use both hands from the first would do well to see that they live up to their beliefs by always directing *both* of the pupil's hands to each bit of braille, whether or not the hands are to be used alternately or together.

In discussing the desirability of eliminating excessive *up-and-down motions of the finger-tips*, it is necessary to consider the physiology of the finger itself. The Uniform Type Committee found that more than 90% of its readers had some up-and-down motion of the finger-tips as they read. It is a matter of general observation, however, that the best readers do not have this motion of the fingers to any noticeable degree. Granting that there is room for more experimentation on this point, there is already much evi-

dence to show that although the organs of pressure are stimulated by any object which causes a deformation of the skin, these organs do not interpret with any degree of accuracy the sensations they receive except through friction caused by moving the finger repeatedly over the same stimulus or consecutively over other stimuli. Apparently the interpretation of pressure sensations is most effective when it is possible to make rapid comparisons between one stimulus or group of stimuli and the next. (See Schafer, *Text-book of Physiology,* and Bürklen, *Das Tastlesen der Blindenpunktschrift.*) The up-and-down motion of the finger-tips is probably the result of an unconscious effort on the part of the reader to interpret the stimuli which are vaguely felt by the finger in the third row of dots. As a rule, an excessive amount of movement is accompanied by a tendency on the part of the reader to spell his words before he reads them. It would be interesting to discover whether those who are taught by the word method or those who are taught by the letter-word method have the greater inclination toward an exaggerated up-and-down motion of the finger. There is no conclusive evidence on this point, but it is certain that the pupils in the experimental classes at Perkins Institution who have been trained to read by the word method show much less inclination toward using an up-and-down motion than do the children who were originally taught by the letter method. The necessary friction for the perception and interpretation of the dots is obtained by many people when running the fingers over the braille horizontally from left to right, with only a slight movement up and down. Whatever reading method is used

by the teacher, she should guard against the child's tendency to feel up and down over each letter after he has once been given letters in groups.

To most seeing people, and even to many blind people, it is incomprehensible that anyone can *read ahead on a lower line with the left hand before the right has finished the preceding line.* Nevertheless, it is a fact that many of the best readers do read in exactly that way, although some of them do so quite unconsciously. One girl who reads with an unusually high degree of accuracy, speed, and comprehension, vowed that she could not possibly read ahead with one finger because her mind could not carry two sets of ideas at the same time. A little later, when this girl was asked to read some fairly difficult material, she was discovered reading so far ahead on the next line with her left hand that her two forefingers met in the middle of each line.

The Uniform Type Committee found that only fifteen out of 1,200 readers went ahead on the next line with the left hand before they finished the preceding line with the right. Twelve of these fifteen were in the faster group of readers, however. Whatever the cause for the change, the number of readers who follow this policy has increased noticeably. It may be that many more blind children are being taught to read with both hands, or it may be that there have been other changes in reading methods which could account for the improvement. In the 1925 experiment, which was modeled after the one conducted by the Uniform Type Committee, it was found that nine of the twenty fastest readers went ahead on the next line and that none of the twenty slowest readers did so. In a careful observation of the free reading of

pupils in the fourth, fifth, and sixth grades of Perkins Institution, it was found that a number read ahead a short distance on the next line. Some read ahead only a few letters, others read ahead as much as two or three words. It has been estimated that in reading a French braille book a gain is made of about fifteen pages to the hour by reading ahead as little as five cells on the next line. Although the average French book is smaller than most American books, this estimate gives some idea of the value of reading ahead even one word on the next line. (See M. Pérouze's article in *Études Pédagogiques* on the teaching of reading to blind children.)

The teachers of the grades mentioned above cooperated in an effort to find out if children could be deliberately taught to read in this manner. They encouraged the pupils to read ahead, and some time was spent, during a period of one school year, in giving them definite training. Only pupils with average or superior ability either in reading or in general intelligence, or in both, were chosen for the experiment. Many incidents happened which made it impossible to carry out this experiment with scientific exactness. However, the progress of the pupils in reading ahead was so slight that we were nearly convinced that the results were not commensurate with the effort. A preliminary experiment had shown the uselessness of attempting to train definitely backward or feeble-minded children to read in this complicated manner.

The fall after this experiment was ended, however, the writer made a discovery which encouraged her to believe that even young children can be *led* to read on the next line as much as one or two words. She

was observing one day in a class of lower third grade boys who had previously spent their second year and the latter part of the first year in the experimental classes at Perkins Institution. She suddenly realized that five out of the seven boys in the class were reading ahead on the next line with the left hand. They were reading material which they had heard from the lips of the teacher, but which they had not previously seen in braille. Only one of these five boys was above normal, mentally; three would be rated anywhere as erratically normal; and one was definitely backward. The story they were reading would have been of average difficulty for children in the last half rather than in the first half of the third grade. Yet these five boys were reading along, orally, almost as fast as they would normally speak, and were understanding what they read.

The previous teachers of the class were immediately questioned as to how they had accomplished this feat. They both said that they had not suggested this manner of reading to the boys, but that when they found one reading ahead on the next line they praised him, and explained to him why this was a good policy to follow. These boys, who had all been taught to read by the word method, rarely stopped to decipher the parts of the words. They showed very little up-and-down movement of the fingers. In fact, it was difficult to detect any movement in the fingers of the two best readers. The writer came to the tentative conclusion that *the word method plus encouragement before their reading habits were formed* were the two forces responsible for the ease with which these quite average

third grade boys read ahead with the left hand before finishing the preceding line with the right.

Forty-four different *positions of the hands* were used by the readers for the Uniform Type Committee. There were only fifteen positions which were held by more than thirteen readers. With slight variations, Position One in the illustration opposite page 54 received the preference of the fastest readers. Position Two, which was about equally favored by fast and slow readers for the Uniform Type Committee, proved to be most popular with the faster readers in the 1925 experiment. Ten out of the faster half in the later experiment used Position Two, as against four in the slower half of the fifty readers.

Observation of the reading of primary children, when they are not conscious of being watched, shows that they are likely to take one of these two positions, if they are two-handed readers, but that they increase the angle between the inner margin of the book and their wrists. This increased angle is produced when the children slump down over their books and spread their elbows far apart.

For children, the matter of *correct posture* bears a very close relation to reading efficiency, and it bears an even closer relationship to the development of interest in reading. This does not mean that constant harping on proper posture during reading is more likely to make of the child a reader than is the opposite practice of placidly allowing him to loll over his book. Some children have such very bad posture, when they first enter school, that their poor posture during reading is a minor matter. With blind children the matter of better posture must be approached from

every known and many hitherto unknown angles. Not being able to see how badly he looks nor how well some other, straighter child may look, the blind child is less influenced by example or personal pride than is the seeing child. Whenever possible, and in every conceivable way, however, the teacher of reading should try to convince the children of the value of good posture at all times.

Point reading brings into play the muscles of the hands, arms, shoulders, back, and abdomen. Strain on these muscles is not felt for a considerable period of time provided the reader maintains a well-poised position of the body as he reads. If he allows his spine to double forward, however, then his shoulder muscles, and even his neck muscles, begin to grow tired and are soon suffering from strain. If he reads with his body and book twisted far out of alignment, as many a blind child does, within a short time his hands and arms are tired and his abdominal muscles feel stiff. As soon as muscular strain is present the child's attention begins to wander, he stretches or slouches, and his interest is lost. Adults who have developed an intense interest in some phase of mental activity may easily work for hours under intense muscular discomfort before they are even conscious of their discomfort. It is a most unusual child who is capable of such profound attention to mental work.

Closely related to good posture during reading is the *proper position of the book.* Ninety-two per cent of the 1,200 Uniform Type Committee readers kept the test material nearly parallel with the edge of the table. There is no doubt that this is the most natural way for it to be placed, with the possible exception of

Position One

Position Two

Positions of Hands Preferred by Best Readers

(From an illustration in the writer's reprint, "Summary of Information Collected by the Uniform Type Committee on the Mechanics of Reading Raised Type.")

a position giving a slight slant to the right, just as a penman's sheet of paper is twisted a little from the vertical. Of the 8 per cent of readers who turned the book differently, four-fifths were in the slower group. Most of this 8 per cent had been educated in one school where the pupils were taught to read with the book at right angles to the edge of the desk.

Since speed and accuracy in reading are both improved by practice, blind children should be given every possible opportunity for receiving that practice. It is impossible for them to have the constant incidental contact with printed matter which is the unavoidable experience of every seeing child who travels in streetcars or sees the headlines in newspapers. Since poor braille mechanics are the surest obstacle to the development of speed, care must be taken that the child use only the best technique.

One more point should be emphasized in this chapter, even though it is not peculiar to blind children. I refer to the tendency toward *lip movement and detailed inner speech* during silent reading. Blind children are more likely to develop this habit than are seeing children, because their reading is of necessity so slow that they can easily spell and speak each word to themselves as they read, even after they have attained what is considered a good rate for braille reading. It is seldom that a blind child can read silently faster than he can speak before he has reached the fifth grade, and many highly intelligent blind people never reach that degree of proficiency. Lip movement and inner speech are handicaps to comprehension and to speed, and should be avoided.

Summary: The points which need to be watched

in order that the pupils may develop proper mechanics for braille reading may be stated briefly as follows:

1. Relaxation, or nervous and physical poise, is most important for the development of sustained interest in reading. Stress should be placed on rhythmic work, free dramatization, and supervised free play in order that the children may not be made more tense by constantly being told to relax in the reading class.

2. The children should be taught that braille can be read much more easily and accurately if the fingertips are not pressed down too heavily on the words. As a rule, very little pressure is necessary if the child has caught the sense of what he is reading.

3. Although the character of the braille dot, its shape, height, and distance from other dots, is usually settled for the teacher by the embossers, still it is helpful for her to know that a slightly round dot (which is more nearly conical than round) is probably the best one for general reading purposes; that dots which are less than .025″ in height are read with greater accuracy and speed, over a period of time, than are dots which are more than .025″; and that lines which are the standard distance apart—.400″—seem wider to the small fingers of a child. The greatest hindrance to reading is the inability to find oneself on the braille page, yet this feeling of being "lost" is what comes to children and adults when lines are too far apart. If children slip too easily from one line to the next, it is probably an indication that they are either lazy or inclined to pay too much attention to the lower half of the words.

4. Unless there is some good reason for making an exception of a particular child, the pupils should be

taught to keep their reading fingers at a slant which makes them form an acute angle with the line of braille they are reading.

5. It is advisable to teach the children to read with both hands rather than with only one, although it is doubtful if they should be forced to read thus if they show a decided preference for using only one. In Germany some evidence has been accumulated which would seem to indicate that one-handed readers who use the left hand are more efficient than those who use the right. The evidence which has been collected in this country is so very different, however, that we are probably justified in discouraging left-handed reading except with children who are decidedly left-handed in everything.

6. Excessive up-and-down motion of the finger-tips should be firmly discouraged, since it retards the reading process and is an indication of letter-reading rather than of word-reading.

7. Reading ahead on the next line with the left hand before the right hand has finished the preceding line is one of the distinguishing characteristics of the best readers. Those who can read in this way not only save time, but are able to enjoy a sustained interest over a long period of time because the speed of their reading more nearly approaches the speed of their mental processes. Probably children should not be forced to read this way, since it may be impossible for some to acquire the rather complicated technique, but all children who have any inclination toward using this method should be praised for their enterprise and encouraged to continue.

8. Two-handed readers should hold their fingers so

that they form acute angles with the inner margin of the page. A right-handed reader should form this angle for the right hand.

9. Correct posture during reading is almost as important as is relaxation of the body and nerves. Bad posture cramps the muscles of the arms and trunk, and dissipates the child's attention. Correct posture so balances the body that strain is not felt for some time. Most blind children, upon entrance to school, have such bad posture that a teacher may do more harm than good by overemphasizing the point in reading class. Training in posture should be more general, and should be followed up in the classroom as much as seems wise.

10. The child's book should be parallel with the edge of the table, or else turned so as to form a narrow acute angle with the edge.

11. A great deal of practice in braille reading should be provided for the child, and he should be held to good braille mechanics in all of his reading, since poor technique is a great hindrance to speed and accuracy.

12. The children should be trained to do away with lip movement and inner speech as much as possible during silent reading. Because of the natural slowness of braille reading, blind children are particularly susceptible to these two failings.

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CHAPTER III

Phonics and Speech Correction

The need for distinguishing between phonetic drill and training in corrective speech is becoming more apparent as experimental work in both fields makes it possible to separate some facts from the mass of opinions. Careful work on the part of a few physiologists, educators, and specialists in speech has established the fact that efficiency in reading is closely allied to efficiency in speech. Since the vocal cords play an important part in thought, and consequently in the interpretation of the printed symbols of thought, children with bad speech defects are likely to be poor in reading—especially in oral reading. Once it was supposed that stammering and other speech disabilities were either passing phases of childhood or else incurable handicaps; it has now been established that most speech defects which do not have a structural cause are avoidable or at least subject to improvement. The relationship between corrective speech work and phonetic drill is chiefly an inverted one resulting from the adverse influence which overemphasis on phonics exerts on the speech of many children. Phonetics is often responsible for changing mild speech difficulties into major ones.

Because of the prevalence of speech defects among blind children, and because of the extensive use of phonics in teaching these children to read, it may be helpful to consider phonics and speech correction sep-

arately before discussing them as they relate to each other.

The use of phonics. Phonetic methods of teaching reading are widely used in schools and classes for the blind. Many teachers who believe that the word and sentence method, with a minimum of attention to phonics, is the most practical means of teaching children *with sight,* are convinced that for children *without sight* it is necessary to use a combination of the letter and the word methods with a maximum emphasis on phonics. They reason thus:

(1) Since blind children, because of the limitations of the sense of touch, must build up the whole from the observation of the parts, they must think synthetically before they think analytically. This is supposed to be as true in learning to read braille as it is in learning to know the arrangement of a room.

(2) Since blind children cannot easily glance beyond an unfamiliar word, they cannot judge the meaning of the word from its setting. On this account they need to possess a technique, from the very first, which will make it possible for them to work out the pronunciation of new words as they come to them. A phonetic method of learning to read provides this technique within a very short time.

(3) Since poor speech is a hindrance to the acquisition of good reading habits, blind children need drill in enunciation and pronunciation even before they read their first stories. Most of the phonetic methods not only provide for such training, but they continue training in exact speech throughout the primary grades.

The relative merits of the letter and word methods

are discussed elsewhere in this book. There is *considerable evidence* in favor of teaching blind children by means of the word method, whether from the point of view of physiology, psychology or pedagogy. Since the finger-tip interprets sensations best when it is passing over a series of stimuli with sufficient rapidity to cause them to blend into a meaningful whole, it is probably not necessary for many blind children to spend much time on the phonetic elements of the words before they learn to recognize the words as wholes. Most of them can acquire a "sight" vocabulary of several hundred words before they feel a need for working out the pronunciation of new words. This delay gives them an opportunity to "fix" the habit of regarding reading as a thought-getting process rather than as a mechanical manipulation of symbols.

The word method is being used successfully by a number of teachers of blind children throughout the country. Most of these teachers subordinate phonic drill, some of them to the extent of eliminating it altogether. On the other hand, there are some teachers who develop enthusiastic readers by methods that are basically phonetic in emphasis. The fact that teachers using both methods can make confirmed book lovers of their pupils (some overemphasizing phonics and others merely ignoring them) would seem to be indisputable evidence that the teacher is infinitely more important than the method. However, neither extreme of method is advisable with regard to phonetic drill.

A reading method which places much importance on the study of the phonetic parts of words prior to a study of the words as a whole is likely to encourage

the inclination of blind children to give excessive attention to details. It does, however, give them experience in recognizing wholes from the sums of their parts, and in building such wholes for themselves. The phonic method also fixes the printed symbols more firmly in the minds of the children by means of repeated auditory impressions.

Nevertheless, many blind children are hindered by having to drill on phonetic elements which they have already learned indirectly. Every blind child, however, needs a certain amount of drill in phonetics at some time during his primary training, so that he will not be handicapped when he meets new words whose sense cannot be guessed from the context. The blind child who has had phonetic training is also in a much better position than is the child without it when it comes to compound words and other long words, toward the end of his primary training. For the recognition of such words in braille, the technique of phonetics has a legitimate place which cannot be adequately filled by any substitute.

In order that the children may not confuse the mechanical recognition of braille symbols with the thought-getting process itself, it seems better to postpone phonetic drill until they have acquired a meaningful touch vocabulary of a hundred or more words. By that time the pupils will look upon phonetic drill as a means to an end—not as an end in itself. The introduction of phonetic drill should be timed according to the speed with which the class acquires reading ability. Probably by the beginning of the second semester of reading experience, that is, by the middle of the first grade, most of the children can safely begin

the study of the phonetic sounds of letters and phonograms. If the training is given to the children in a group, rather than individually, one fifteen-minute period a day will be enough for the first few months. Before the middle of the second year the time can usually be reduced to sixty minutes per week. During the third year a half-hour of phonetic practice a week should be sufficient. This half-hour allows for the review of phonetic elements already learned, and for training in those that have not been previously encountered.

The teachers of the word method who make practically no use of phonic training run the risk of leaving the pupils unprepared to meet those "periods of confusion" which are experienced by even the most efficient adult reader when he comes to words which are unfamiliar or which have unusual connotations. The brighter the child the less need he will have for intensive drill in phonetics, since he will discover many of the principles for himself. Most children, however, profit by repetition of the phonetic elements which are causing them trouble. The period for their phonic training should be kept quite distinct from any of their reading classes, however. It can be combined much more satisfactorily with writing or spelling than with reading, since both of these subjects require the recognition of the parts of words.

The second reason which has been advanced in favor of a distinctly phonetic reading method is that blind children need to be technically prepared for deciphering new words as they come to them, since they cannot glance ahead and learn the meaning of the words from their context. "Glancing ahead" necessi-

tates much more mental alertness on the part of a finger-reader than it does on that of an eye-reader. The finger moves back and forth with far less accuracy than does the eye, and it must stop to consider many details that the eye could ignore. But many blind children, who are blessed with the ability to grasp similarities and dissimilarities quickly, learn to recognize new words through unconscious recognition of their parts. A few children with superior powers of observation—which implies good attention—are able to read ahead of the new word, pick up the meaning of the passage, and either supply the meaning of the unfamiliar word or else ignore it as they go on with the selection. But anyone who has taught blind beginners will know from first-hand experience that there are very few, even among those with the highest mental ages, who have that voluntary control of the attention which is generally necessary for such reading ahead in braille.

The "generally" is inserted in the preceding sentence because of one or two unusual cases of feeble-minded children whose excellent rote memory for both kinesthetic and auditory impressions, combined with their indifference to the exact meaning of words, served to carry them over most new words with slight consciousness of any trouble. One of these pupils could gather the import of simple material quite satisfactorily, in spite of having feeble voluntary attention. Also, he could read orally passages of considerable difficulty with such expression that the listener would be impressed by his erudition were it not for his contented substitution of any known word for an unknown one with no thought as to its appropriateness.

However, with the exception of the few children who possess not only superior intelligence but also superior reading interests, and with the exception of the few "idio-savants," blind children must know how to work out phonetically all words in their reading that are not included in their "sight" vocabulary, if for no other reason than to carry them across unfamiliar ground before they have lost their bearings.

The last argument in favor of the phonetic approach to reading for blind children is that, because of the prevalence of speech defects among them, they have special need for the drill in correct enunciation and pronunciation which is afforded by phonetics. This point is emphasized in the minds of many by the recently discovered correlation between speech defects and inefficiency in reading. Phonic drill does give training in exact speech, but it is usually given in such an artificial way that the time spent on such drill produces slight improvement in the every-day speech of the pupils.

As a rule, the children are required to learn the phonetic letters and phonograms accompanying each lesson in the reader, whether or not they particularly need that drill. As a result of this, some children do improve their speech because they happen upon the correct position of the speech organs when they reach the phonic lessons relating to their specific difficulties. On the other hand, children with serious speech defects usually have such a complication of bad speech habits to overcome that they rarely acquire the proper co-ordinations without more expert and specialized training than can be given in a period of phonetic drill. Because their effort to speak correctly is not accom-

panied by a corresponding ability to make good, these children are likely to become so self-conscious that both their speech and their reading are harmed rather than helped by phonetic drill. This is especially true of blind children, because they cannot imitate the position of the teacher's lips and tongue. A limited investigation suggests that speech defect is more prevalent in schools for the blind than in schools for seeing children.*

Since the teaching of phonics often has a bad effect on children who are handicapped in vocal expression, the teacher must be ready to subordinate her phonic drill to the shortcomings of the individual pupils in her class. How this can be managed will be considered later.

No method or combination of methods will be adequate for teaching all children in all schools. This is true in schools for seeing children, but it is far more marked in schools for the blind. A teacher who believes in a phonetic approach to reading must be able to discard it entirely, for one pupil who seems utterly unable to apply the principles, while she continues it for the rest of the class. Teachers who do not favor phonetics must, nevertheless, be ready to train by a purely phonetic method those pupils whose mental make-up prevents their grasping the meaning of words until they have articulated them.

In most primary classes for the blind are to be found children who border on feeble-mindedness, and who are incapable of sustained interest in the content of the braille page. If they had sight, many of these chil-

*See page 72.

dren could probably learn to read quite satisfactorily by the word method, as do children with much poorer mentality in the special classes of the best city school systems. As it is, however, carrying the finger over whole words and groups of words requires a degree of concentrated attention which is impossible for most of them. They are all interested in the recognition of small units, and in the repetition of sounds, since this is a mechanical, rhythmical process of which they are quite capable. For this reason, it is probable that they should be taught to read by a strictly phonetic method, considerable emphasis being placed on the mechanics of the method. Meaning will gradually be attached to printed words which would never have been learned by the word method.

A phonetic method which connects the vowel to the following consonant is probably not as practical for use with blind children as a method which connects the vowel to the preceding consonant. There are two reasons why the latter method is the better. Blind children are undoubtedly more influenced by auditory impressions than are children with sight. Because of this it is important that the phonetic parts should, when spoken consecutively, give the correct sound of the whole word. When the first consonant is left standing alone, it is almost impossible to avoid adding a vowel in speaking it, or even in thinking it. It is not so hard to pronounce "g" correctly, but it is a phonetic feat, of which few children are capable, to give only the hard "g" sound to that letter. This is what one hears when listening as a child runs through a list of words starting with hard "g": "gu-un, gun; gu-ot, got; gu-et, get; gi-ive, give." With blind chil-

dren, especially with those having speech defects, that first grunted short "u" is likely to assume undue importance, because of their natural inclination to attend to every spoken sound. Even children with sight are sometimes so influenced by this first unprinted vowel that they are confused by the difference between the sound of the word-parts and their symbols. It is difficult for children who are thus confused to combine the parts into the correct pronunciation of the whole word. This is particularly true of blind children whose fingers are having difficulty in distinguishing the exact character of the word-parts.

The second objection to a phonetic method which leaves the first consonant standing alone is that it encourages an up-and-down motion of the finger-tip by the child who is trying to determine the identity of the letter. One letter does not require a horizontal motion of the finger as does the combination of even two letters.

If the vowel is added to the first consonant, the finger has begun its horizontal journey and the tongue has the pronunciation of the word well started. The recognition of the following consonant will, in many cases, be almost automatic, since both finger and tongue experience a need for completing an incomplete action. For instance, it is much easier to grasp the connection between these word-parts, "gra-nd," than between these, "gr-and," which are inevitably pronounced either as "ger-and" or "gru-and." The syllable "gra" demands something more to complete it, whereas "ger" and "gru" are both quite satisfying to the primitive vocal requirements of the child.

One other point in favor of using a phonetic method

which unites the vowel to the preceding consonant is that such an arrangement is in keeping with the English laws of syllabication and word division. This point applies with equal force to the teaching of any group of children, whether or not they lack sight.

It may be noted that throughout this discussion regarding the use of phonics in teaching blind children to read, the terms "phonics" and "phonetics" are used without distinction. The word "phonetic" as applied to reading drill was introduced to designate methods which made use of diacritical marks for the purpose of indicating the different sounds of each letter. As the use of diacritical marks in books for young children has, by common consent, lost favor, the distinction between the words "phonic" and "phonetic" has practically disappeared and they are used interchangeably.

The points which have been emphasized in the preceding pages may be summarized as follows:

(1) With blind children of normal mentality and of average reading ability, the introduction of phonic training should probably be postponed until the children have acquired a touch vocabulary of at least a hundred words. Some time during the second semester of the first year is early enough to introduce the first phonetic training.

(2) A child who is either definitely feeble-minded or who is incapable of voluntary control of the attention will probably do better if he is taught to read by means of a strictly phonic method. He can be interested in the rhythm and the mechanics of reading when he cannot be held by the meaning of the symbols.

(3) All blind children need some phonetic training.

It helps them over new words of which seeing children could infer the meaning by glancing ahead, and it aids in holding their attention over long words and phrases which are obscure in meaning although the parts are familiar.

(4) Except in special cases teachers of the blind should use those phonetic methods in which the vowel is connected with the preceding consonant rather than with the following one. This makes it impossible to pronounce the initial consonant as though it were a syllable in itself. It also leaves the child with a feeling of incompleteness which leads him on to the next phonetic element in search of satisfaction.

(5) Care must be taken that phonic drill does not intensify, initiate, or exaggerate speech defects. It is pointed out that, since there is good reason to believe that there is a greater prevalence of speech defects among blind children than among those with sight, it is essential that attention to speech be considered as more important than any particular phonic system.

(6) Since exceptional children are very numerous in classes for the blind, training in phonics is often more effective if given to the pupils individually. This makes it possible to train each child in the particular phonetic elements for which he shows the most need. Although such training is strongly advocated, recognition is made of the fact that other demands upon the teacher's time and energy often make individual work with the pupils very difficult.

Speech defects. About five years ago, at the suggestion of Dr. Samuel P. Hayes, Mr. Edward E. Allen invited Dr. Sara M. Stinchfield to make a speech survey of Perkins Institution for the Blind. Two years

later, Dr. O. H. Burritt asked her to survey the Pennsylvania Institution for the Instruction of the Blind. In the course of these two surveys she tested 404 pupils, 49% of whom were found to have speech defects which were sufficiently serious to warrant corrective treatment of one sort or another. In tests which had previously been given to public school children, approximately 18% were found to be in need of such remedial treatment. Even 18% is too large a proportion of the school population, but 49% makes one pause and wonder what can be the cause. It may be that Dr. Stinchfield draws the right conclusion when she says that this excessive prevalence of speech defect among children without sight is a strong indication that correct speech is much more dependent upon sight than had been realized. It is also surprising to find that in both these schools there is a higher percentage of speech defect among the girls than among the boys. In Perkins 59% of the speech defect cases were girls, as against the 41% among the boys. Of the total number of pupils tested in both schools, 43% of the boys and 55% of the girls were found to be in need of remedial work. As a result of the many speech surveys made by different examiners in schools for the seeing, it has been estimated that three times as many boys as girls are subject to defective speech. Why the tables should seem to be so turned about in these two schools for the blind has not yet been decided.

The following summary of significant speech tendencies in the two schools which were surveyed is quoted from a paper which Dr. Stinchfield read at the 1926 convention of the American Association of Instructors of the Blind:

"I. Large number of letter substitution cases, 29* or 14%. Commonest among kindergarten children.

II. Mild oral inaccuracy with ineffective speech, 48 or 24%. Commonest among upper and lower school girls.

III. Oral inaccuracy and lisping, 23 or 11%. Commonest among upper school girls.

IV. Stutter or hesitant speech, broken rhythm, etc., 11 or 5%. Most common in the kindergarten."

As a result of the Perkins survey, Mr. Allen appointed a trained assistant to work under Dr. Stinchfield's direction in an effort to reduce this undesirable preponderance of ineffective speech. This assistant has found that the speech defects of many of her charges have been intensified by, if not caused by, mental and emotional difficulties which must be eradicated before the speech difficulty can be overcome. It may be that the abnormal conditions of life which most blind children must meet are responsible for many of the shortcomings in speech which are found among them.

Correct speech is a most valuable asset for anyone to possess, but it is invaluable for a person without sight. A good voice and attractive speech go far toward compensating for possible shortcomings of appearance and personality, and count strongly in the blind person's favor economically, especially when he applies for a position which necessitates frequent contact with people. Pleasant speech, even though it may not be cultured speech, is also a great social asset

*29 stands for the total number of pupils having this defect. 14% is the per cent which this number is of the total number of pupils having speech defects.

which no person without sight can afford to ignore. The school's responsibility for a child's speech habits starts when he enters the kindergarten, but because of the difficulties involved in remedial work, little has been done to give the blind child satisfactory speech training. Classes in elocution and in artistic speech work are conducted in several of the schools and are invaluable, but there are many serious speech defects which cannot be touched by this type of training. Phonetic drill is likewise inadequate in such cases.

There are two facts connected with the proper development of speech among blind children which particularly impress the speech expert. The first is that there is a positive correlation between ineffective speech and inefficient reading. The second is that speech defects are often accompanied by mental and emotional abnormalities.

Sometimes both the poor speech and the poor reading are the result of an abnormal development on the part of the child for which there is at present no certain cure. Extreme feeble-mindedness is the most common abnormality, but there are others which cause great hardship, such as inadequately developed sense organs, muscular paralyses, too much or too little cerebal fluid, and some types of brain tumor. Disabilities such as these appear to be much more numerous among blind children than among those who see. There is need for a medical and psychiatric survey which will be so thorough and so comprehensive as to provide workers for the blind with reliable figures on the prevalence and character of these additional handicaps. Until we have this fundamental knowledge, teachers in schools for the blind will continue to spend valuable

hours in attempting to teach such children when it is impossible for them to learn.

Persistence in trying to teach pupils what they cannot learn has two bad effects. The first is that many of these children become so self-conscious over their inability to read or to spell that they develop an attitude of depression or of indifference toward all of their school work. In residential schools, where the children associate with the same people in and out of classes, this attitude may be carried into their social life. The second result is that the loss of so much of the teacher's valuable time makes it impossible for her to give the other children the thought and attention to which they are entitled.

Much of the nervous tension which makes it impossible for some blind children to read braille satisfactorily also makes it difficult for them to speak correctly. Other children are equally handicapped by possessing less than the normal amount of tension. They lack the energy to speak well or to give sufficient attention to the reading process.

A poor sense of rhythm is another frequent cause for both poor speech and poor reading. Although most children are highly responsive to rhythm, a few seem to be markedly uninfluenced by it. It is not always possible to decide whether this lack of rhythmical appreciation is innate, or is simply the manifestation of some mental or physical disorder. While unrhythmical children probably can never be converted into graceful dancers or great musicians, proper training will often develop their rudimentary sense of rhythm to the point where they can learn to speak with poise

and to read with comprehension and a fair degree of fluency.

Mental and emotional disturbances are frequently responsible for the defects in speech which are found to accompany poor reading. In fact the excessive nervous tension already referred to is usually caused by some emotional trouble which must be treated before improvement can be expected in either speech or reading. A frequent cause for emotional instability among blind children is fear, the most common type of which is the fear of being hurt while moving around. A few children without sight seem never to experience this fear, no matter how many and how serious the bumps they receive. Others are in constant dread of being hurt and so live under great strain, even after they are no longer consciously afraid. Some children quickly lose this fear when they have been with other blind children long enough to realize that they move around freely and fearlessly. Many of them, however, must be gradually and unconsciously released from their fear by being drawn into interesting games and duties requiring action. The tension caused by this fear may outlive the fear itself, in which case exercises in relaxation are necessary until improvement is manifested through better reading and pleasanter speech.

Another fear which hampers the child, and which often causes undue tension, is the fear of failure in school work. This he shares with many of his seeing brothers, but the blind child has more time to brood over his work and has less opportunity to forget his nervousness in physical activity.

The children who suffer most intensely usually have

acquired their fear from some source which cannot always be traced. The most extreme case which has come to the writer's attention is described in Chapter VI. Fears from unusual causes are likely to be seared so deeply into the mind of a child that it is impossible for him to talk about them. Sometimes it demands the ingenuity of a highly-trained mental hygienist to find the source of the trouble and to heal the wound. Often the cause cannot be found, and the treatment must consist in a trial and error method of finding what will elicit a helpful response from the child. Children who appear to be under the influence of extreme fear should be referred to a specialist in mental hygiene work, provided one is available. Otherwise, the teacher must do the best she can, and with infinite patience help the little sufferer to overcome his handicap. Certain characteristics of speech are often symptomatic of some mental or emotional disturbance. For instance, fears and other causes of over-tension are usually accompanied by a lack of vocal control, or tension of the jaw, causing a shut-in type of speech, and low vitality is shown by oral inaccuracies, general slovenliness of speech, and poor vocal quality. (Although stuttering is one manifestation of a bad nervous condition, it may also be the result of imitation or of too great haste in speaking. Because of this, the inexperienced person must not at once assume that a neurotic condition is the cause of a given child's stuttering. The same caution applies to stammering.) Psychopathic unbalance of the emotions also affects the voice and speech, but the primary teacher is less concerned with these than is the teacher of the higher grades.

Because speech defects are so often the result of

nervous disturbances, the teacher, whenever possible, should enlist the aid of a specialist in the treatment of children who suffer from them. With pupils whose poor speech is found to be the result of some minor difficulty, the teacher can accomplish a great deal. Indeed, if she is to make efficient readers of them she must study their speech as much as she does their reading. In order to utilize her time to the best advantage, she should combine speech with her regular school work whenever possible. If this cannot be done satisfactorily, she should, if necessary, substitute speech training for other school work until the child is adequately prepared to join his regular classes.

Children who are nervously tense through fear of being hurt are seldom satisfactory in reading or in speaking. Both activities are likely to be spasmodic and inaccurate. The wise teacher will not make such a child unhappy over his inability to speak or read correctly, but will do everything in her power to dispel his fear. The remedy for such a fear usually lies in activity. Getting the child to walk alone across the middle of the room is sometimes an important achievement. Next he should be induced to walk toward the sound of a bell without stopping along the way to feel around for a guiding object. Then he may imagine himself a train which chugs rapidly around the room. As another step to increasing confidence, he may play that he is a runaway horse, a race horse, and a speeding automobile. After he has learned to move around with some degree of freedom, he should be drawn into active games and exercises with the other children. Thrusting him with other children too soon may result in his receiving so many bumps that he

will become more timid and more tense than ever.

Sometimes children who have acquired other dreads and fears which seem foolish to adults can be made to realize how unfounded these are by having them casually revealed in their true light, but a cure is not always effected so easily. For instance, one child who heard herself called subnormal became obsessed with the idea that she was feeble-minded. She was so unhappy over what seemed to her a disgrace that her nerves were near the breaking-point before someone discovered the reason. The fact that she was having difficulty with her knitting seemed to be a positive proof that she really was below normal. Her speech became shut in and tense, her silent reading, with which she was having her first experience, very poor, and her oral reading interrupted by stammering and tears. The conviction that she was feeble-minded became so thoroughly fixed in her mind that it was necessary to give another mental examination and some special diagnostic training in order to convince her that she was really quite normal. Shortly after she had lost her perfectly natural but unfounded fear, her speech returned to normal and her reading improved rapidly.

The persistence of "baby talk" until a child is six or seven years of age is an indication either that the parents have been indifferent to his bad habits, or that they have tried to keep him a baby long after he should have outgrown his infancy. A teacher who has patience can accomplish much with such a child. Everything possible should be done to instil in him a desire to be a "real man" who speaks distinctly and who reads so well, orally, that his friends look forward to his entertaining them on rainy days. Every

effort must be made to keep people from treating these children as though they were still babies. Few teachers realize the danger to the child of allowing him to remain in the protected, self-satisfied infantile state which such habits indicate. An instance in point is given in Chapter VI. In the primary grades the teacher has an opportunity to draw out these children and make real boys and girls of them. If they are allowed to continue in this infantile state of mind until they approach adolescence, they are probably beyond the point at which they can profit by any training which the teacher can give. In training these children whose babyhood has been unduly prolonged, the co-operation of the parents in the re-education problem is of great assistance, but is sometimes hard to obtain.

Strictly phonetic training is often very beneficial in working with these children. They are unlikely to have much interest in the content of books, but they do often enjoy the mechanics and rhythm of phonetic drill. Through this interest many of them can be led to read for meaning more quickly than could have been done by the word method. Other children who are infantile in their reactions are, nevertheless, sufficiently alert to feel a little curiosity about books. They can learn very satisfactorily by the word method, but will benefit also by receiving considerable phonic drill outside of the reading class. They should be praised for speaking distinctly, like "grown-ups," and they should be given practice in such speaking. When they have once been coaxed into pronouncing "s" correctly, they should be told that whenever they are heard to say "th" for "s" their questions will go unanswered until they have corrected themselves. Firm

insistence on the correct use of a phonetic element, once it has been learned, is essential if the children are to be finally brought out of babyhood.

For children with foreign or provincial pronunciations, phonetic drill can be made very practical. The drill should be fitted somewhat to the language need of the individual if it is to be most useful. The New York child who says "boist" for "burst" has a different problem from that of the German child who pronounces his "w's" as though they were "v's." Some children will need additional drill in correct speech to counteract the adverse influence of their home environments. This is especially true of children whose families speak only a foreign language.

Some children acquire slovenly habits of speech through imitation. When they associate with people of correct speech their imitative tendency may produce better speech habits without any effort on their part. As a rule, however, they need the constant prodding which is afforded by phonics, speech games, audience reading, and dramatization.

The main points then with regard to speech defects in schools for the blind are as follows:

(1) As a result of a survey made at Perkins Institution and at the Pennsylvania Institution for the Instruction of the Blind, it was found that 49% of the 404 pupils tested had speech defects that called for remedial work. Probably only 18% of seeing children need similar correctional speech training.

(2) Whereas, among seeing children who are in need of speech training, it is found that 75% are boys and 25% are girls, in these two schools for the blind 41%

of the speech defect cases were boys and 59% were girls.

(3) Experts in speech soon discover two facts among blind children: (a) that there is a positive correlation between poor speech and poor reading performance; and (b) that speech defects are frequently accompanied by easily observable mental and emotional disturbances.

(4) Physical abnormalities are often the cause of both inefficient speech and inability to read satisfactorily. Too great persistence in trying to teach children with such abnormalities to do what they are incapable of doing has two bad effects: first, the development in the child of an unfavorable attitude toward the school; and second, the loss of time which the teacher should be devoting to children who can profit by her efforts.

(5) Children who are overwrought nervously and those who are of the inert type generally test low, both in speech and in reading.

(6) Lack of the sense of rhythm is a serious handicap to a blind child both in speech and in reading.

(7) Among the mental and emotional disturbances which affect speech and reading, fears are the most common. The half-repressed fear of running into something is the most prevalent, though it is fortunately the most easily dispelled. Other fears are more difficult to eradicate, some of them presenting even to the most expert mental hygienist problems which he cannot solve.

(8) Different sorts of emotional disturbances are likely to be indicated in the voice and in the manner of speaking, either through one or through a com-

bination of speech difficulties. By the manner of expression the observant teacher can form a rough judgment as to the type and the gravity of the pupil's emotional instability.

(9) In order to utilize phonetic drill and other school performances as aids to speech, the teacher will find it wise to study the needs of the individual children within her class.

(10) The continuation of "baby talk" into childhood is often found among blind children. Its cure requires infinite patience on the part of the teacher, and boundless encouragement to the child to "grow up." Phonetic drill can frequently be used to advantage with these children, in lieu of other remedial speech training.

(11) Phonetic drill, plus additional speech training, is important for children with foreign or provincial pronunciations.

(12) Phonetic drill is good for children who have acquired slovenliness of speech through imitation. Correct speech habits which are suggested by phonic drill should be reinforced in every possible way, however.

Co-ordination of speech work with phonic drill, as has already been suggested, is most important in schools for the blind because of the number of pupils with speech defects which call for remedial training. Inefficient speech is a more serious drawback to the acquisition of good reading habits than is an ignorance of phonics. If both phonics and remedial speech training cannot be offered during the first two years of school, it is phonics which should be curtailed. Often, however, phonics can be used to help in speech correction, as has been pointed out in the last few pages. The following rules are safe general-

izations for a teacher of blind primary children to follow:

(1) With most of the class, postpone phonetic drill until the children have acquired a "sight" or touch vocabulary of at least a hundred words.

(2) With children who have speech defects, start remedial training just as soon as the confidence of the children has been gained.

(3) In the case of children who have serious speech defects, postpone phonetic drill until it is certain that such drill will not interfere with the correction of the children's difficulties.

(4) For children who have mild speech defects, arrange the phonic drill so that it will serve as additional speech training, continuing the emphasis on improvement in speech.

(5) Give to no child intensive drill on what he already knows well.

(6) Make frequent use of phonetic speech games and dramatizations. The educational charts and the "Boston School Boards" are helpful in making play out of phonetic drill.

(7) Make liberal use of rhythm in speech work.

(8) In cases where children having poor speech and poor reading ability give indications of emotional instability, enlist the aid of a qualified specialist.

(9) Above all else, subordinate the reading method to the needs of the individual children in the class.

The teacher who bears these rules in mind and who applies them with discretion will be rewarded by an improvement in her reading work and a decrease in the amount of speech defect. And what is even more

important, from the point of view of the child, is that there will be a decrease in nervousness.

Summary. On page 70 is given a summary of the points which seemed to need special emphasis concerning the use of phonic drill with blind children. Beyond stating the reasons in favor of employing some method which unites the vowel to the preceding consonant, no particular phonic method is recommended.

The main points which have been brought out with respect to remedial speech work are summarized on page 81. The prevalence of speech defects among the blind children in schools where the tests have been given has been stressed because it is an unfortunate condition which has not received the attention it needs. It may seem that in this handbook on reading too much has been said about the underlying causes of many of the speech defects, but we feel that such emphasis is necessary because of the frequency with which difficulties in reading and difficulties in speech are found together. Often the speech difficulty affords an indication of the cause of inefficient reading.

Just preceding this summary, nine rules are given for co-ordinating speech training and phonic drill. These rules may serve the discreet teacher as guides for adjusting her methods to the needs of blind children, whether she is changing her methods from those which she has always used with seeing children, or is altering the methods which she has built up from years of experience with blind children.

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CHAPTER IV

Discussion of Present Methods of Introducing Beginning Braille Reading

In 1926, the American Foundation for the Blind conducted a survey of present methods of teaching primary braille reading. The results of this survey, made possible by the co-operation of thirty-five primary braille classes, were presented in a pamphlet entitled "Present Status of Instruction in Primary Reading in Residential and Day School Classes for the Blind." It was found that three different methods were in use for introducing children to the intricacies of braille reading—the letter method, the letter-word method, and the word method.

The teachers using the first two methods usually consider the letter as the unit of reading, but are likely to precede the study of the letters with a study of the dots which compose the braille character. There are a number of contrivances designed to aid in the study of the dots. Most of those used in this country are adaptations of the peg-board. Some of these peg-boards are arranged so as to give two rows of eight cells each, whereas others have one row of cells numbering from one to six. There are also reversible peg-boards which make it possible for a child to make his braille letters from right to left as he would in writing, and then turn the board over so as to read from left to right. In the teaching of writing this peg-board is probably a very serviceable ally. A few teachers substitute other devices for the peg-boards. Some use

marbles punched into clay or "Plasteline" to represent the braille dots; others use small pellets made from "Plasteline"' or wax, which can be made to cling to their places when they are grouped to form different letters. All of these expedients present to the child a greatly enlarged braille character, so that he may see clearly the relationship between the dots which make up the character. Another device, which is rarely used in this country, is the so-called "Braille Giant Type," used in England. Sometimes a metal sheet of ordinary braille is given to the children on the theory that the metal intensifies the sensations received by the child's fingers. Although the distinctness of the dots may be temporarily increased, it has been found that some children are repelled by the touch of the unyielding metal. The coldness or warmth of the metal annoys some children. Also there is reason to believe that, even in the case of children who like the metal sheet, the fingers soon become overstimulated, with the result that the impressions become vague and inaccurate rather than clear and distinct.

There are some advocates of the letter-word method who do not start with the dots, but first give the children the letters as wholes, postponing the study of its component parts until it is well learned as a unit. The dots are then studied by teaching the children to write the letters. A few of these teachers even give the children some drill in recognition of phonetic groups, of letters and of short words before they begin a discussion of the relationship of the dots within the individual letters.

Although practically all of the teachers who use these two methods have the children combine the let-

ters into words as they learn them, those who use the letter-word method soon begin to stress the words as the essential item in reading, thus relegating the letter to a secondary position as a necessary mechanical device for building up the words on the printed page. The teacher of the letter method continues to put the chief emphasis on the letter as the most important unit of the printed page. The difference between these two methods is very important, and should be carefully noted; the letter method keeps the child's mind centered on the mechanics of the reading process with the meaningful content of the braille page occurring to him incidentally; the letter-word method shifts the child's attention from the mechanics of reading to the *content* of what is read within a short time after the child has become acquainted with braille. This means that children who are taught by the second method are better prepared to treat reading as a thought-getting process.

All educators of the blind who advocate some method of teaching reading which begins with the smallest units (such as the dot or the letter, rather than with a larger unit such as the word or short phrase) present as their chief reason the traditional theory that because the child's finger can cover only one letter at a time the child can, therefore, *read* only one letter at a time. It is true that the child's finger generally covers only one letter at a time—certainly not more than two—but since the finger *perceives* touch stimuli best as it is drawn over them, when it is in an active rather than a passive state, we may fairly question the validity of this reason for teaching letters before words.

The word method is more widely used in the teaching of reading to blind children than we had realized before the 1926 survey of reading methods. More than a third of the teachers responding to our questionnaire reported that they taught their children to recognize whole words, phrases, and short sentences before they taught them the letters and component parts of the letters. (It is unknown whether or not this proportion would hold for the entire group of teachers of beginning braille reading.) This, of course, involves postponement of the teaching of writing until the children have fixed the habit of thinking in large units, so that the study of the dots will not interfere with the reading process. So far as we know, however, writing is always begun before the end of the first term.

Probably the word method cannot be carried as far in classes for the blind as in schools for the seeing, because the blind child's attention will not stand the strain placed upon it by too long phrases or even by too long words. It must be remembered not only that a word in braille is much longer than the same word in ink-print, but also that the sense of touch does not accurately interpret anything "at a glance." When the finger is stationary, it does indeed receive impressions, but they are vague and ill-defined. The finger perceives best when it is moved across a series of stimuli. The finger must read by means of many *consecutive*, not *simultaneous*, stimulations of the organs of touch. Within a few weeks after the seeing child has first been introduced to reading, he is able to perceive a sentence of eight words with as few as four pauses of the eye, or approximately an eye-pause

for every two words. It is entirely possible for an adult with sight to grasp the contents of a whole page of easy reading matter with as few as one eye-pause to a line. No blind child, and no blind adult, can read in a way that is at all comparable to this. On new material the blind child's finger must travel over every word as he comes to it, although in silent reading it can ignore many of the details. To the blind child, the strain of remembering a long succession of small touch impressions is much greater, for an equal number of words, than it is for the seeing child to remember a succession of synthesized wholes. For this reason, and probably only for this reason, the word method has limitations when it is used with blind children.

As an illustration of the added strain that is placed upon the attention of the blind child, it is interesting to consider the first line of The Winston Primer, 1920 edition. The sentence reads, "The Little Red Hen found some wheat." Four inches of large type is sufficient to say this in ink-print, and four eye pauses would probably be enough for reading it, if the child is familiar with the individual words. The same line in braille (Full Spelling) takes a little over nine inches. Even if it were written in Grade One and a Half, it would still take more than twice as much space as do the same words in ink-print. Also, these seven words which can be covered by a seeing child in not more than four glances of the eyes, must be read by the blind child with a continuous movement of the fingers over all seven words. Unless the blind child's fingers actually distinguish the word "Hen" and "found" he may mentally substitute the words "Pig"

and "ate" without knowing that he was wrong until he meets the word "Hen" in some future sentence.

Although the word method has brought good results wherever it has been used, it is generally recognized that the blind child must be taught to spell words for himself much sooner than children with sight. Apparently the silent pronunciation of a new word serves to carry the child's thought over that word and through a long phrase or group of words before his attention slips and he has lost the gist of what he is reading.

In order to obtain a better understanding of the process of teaching reading to blind children by means of the word method, the writer has spent some time in the class of one of the leading exponents of this method. Also in co-operation with the writer, the teachers in the experimental primary classes at Perkins Institution have changed to the word method so that we might find out just how it should be done. The word method was first introduced into these classes about two and a half years ago. As a result, we have satisfied ourselves that with most blind children this method works better than does either of the other two. Some difficulty was experienced in shifting the first and second grade boys from the method by which they were originally taught, and for some time the wisdom of the change seemed doubtful. By the beginning of the third year, however, we no longer doubted. The boys of the regular second grade, who were then in the regular third grade, could read new material of moderate difficulty with marked fluency and with a high degree of comprehension. Mention has already been made of this group of boys in Chap-

There was a crooked man,
And he went a crooked mile.
He found a crooked sixpence
Upon a crooked stile.
He bought a crooked cat,
Which caught a crooked mouse.
And they all lived together
In a little crooked house.

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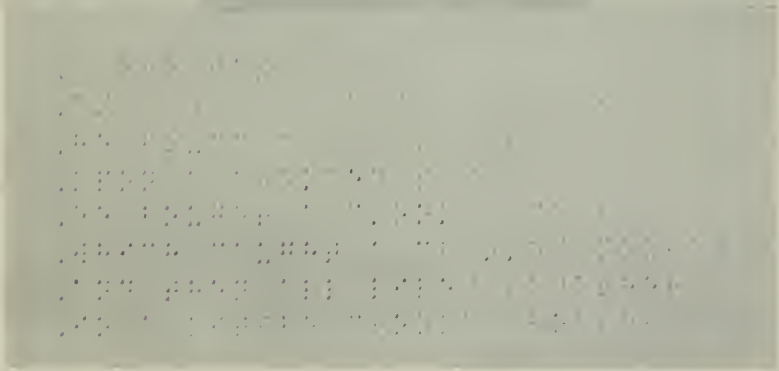

Winston Primer—Page 69
Ink-Print and Braille Editions

ter II in the discussion of the value of reading ahead on the next line with the left hand before the right hand has finished with the preceding line. The "special" third-graders, who had been tentative second-graders the year before, were also found to read better than we had dared to hope, although none of them showed signs of acquiring any such mechanical skill as that of reading two lines at the same time.

It is interesting to note that the teachers who use the word method are to be found almost without exception among those who would like to have contractions taught in the first or second grades. Postponing the introduction of contractions until the child has had more experience in the reading and writing of braille necessitates the relearning of many word forms which might otherwise be fixed in his mind by uninterrupted use. These teachers also contend that the early learning of contractions aids rather than hinders correct spelling.

In response to a letter from the American Foundation for the Blind regarding English methods of teaching braille reading, Miss M. M. Garaway, of Linden Lodge, 26 Bolingbroke Grove, Wandsworth Common, London, kindly obtained the desired information for us and sent us, in addition to a brief summary of their methods, a few reports which she considered typical of all. Apparently the letter-word method is the most widely used among the teachers of the blind children in that country. Emphasis is placed upon the phonetic sound of the letter, however, rather than upon its name, the names of the letters usually not being given until the sounds have been well learned. Braillette boards (or peg-boards), nail boards, and wooden

blocks with holes for marbles are used for starting the children on the study of the letters. Apparently writing is not taught until the child has learned all his letters. The following paragraph is quoted from one of the reports which Miss Garaway forwarded to the Foundation:

"As soon as the children know about six letters, we give them words containing those letters. Then they gradually learn new letters and add new words. As soon as all, or nearly all, of the letters are known, we give the first sentences. Words of four or five letters are then learned and sentences containing them are introduced. Later, sentences are gradually given introducing new sounds, such as "the," "oh," and the long vowel sounds. Small braille is used as soon as the children are ready for it. At this stage, too, we use a first reading book and begin the use of the writing frame. Our two lowest classes work entirely in Grade I. As soon as a child can read a simple book in Grade I fluently, he will have reached our highest class and will begin to learn the contractions of Grade II. These are gradually introduced by various exercises and sentences which we ourselves write on cards, as no book seems adequate."

We should be reminded that English blind children who read Grade II have 190 contractions to learn, whereas our pupils who read Grade One and a Half have only 44. Grade II is often learned by individual American pupils who have reached the high school and who feel the need of having access to text-books published in England. In Canada, a still larger number of pupils learn Grade II. At least one of the Canadian

schools teaches Grade II instead of Grade One and a Half just as is done in England.

Another English teacher reports an ingenious method for supplying meaning to the individual letters of the alphabet. She connects each letter, in the child's mind, with some object the name of which begins with that letter. The alphabet is taught according to the structural simplicity of the letters, as follows:

"A—apple's letter. The children have an apple and talk about it, pretending they can only say the beginning of the word 'apple.' As the letter *A* has only one dot, each child is given one apple, which he is allowed to taste.

L—leg's letter. This letter is long and very straight. The children stand on one leg, then build a long leg with their nails on the nail-board, out of dots one, three and five.

D—dog's letter. This is a dog with his tail hanging down, dots one and two representing the dog, and dot four representing his tail, thus— ⠙

P—pipe's letter. The children handle a pipe, noticing its long stem and the bowl at the top, then they build a pipe on their nail-boards, thus: ⠏

For anyone who prefers to teach by the alphabet method, this way of lending interest to the letters is full of possibilities. As the teacher herself says, this system makes use of several senses in the process of teaching the alphabet, as, for instance, the senses of

taste, smell, and touch for the apple, in learning the letter *a*, and the senses of smell and touch for the flower, in learning the letter *f*.

As the pupils learn their letters on letter slips, they accumulate a pile of slips which they keep in a box. Slips containing short words are soon accumulated in the same way, the letters being put into very short words as soon as they are learned.

According to a very comprehensive and thoughtful report which was sent to us from the New South Wales Institution for the Deaf and Dumb and Blind, the children in that school are taught by the alphabet method. Judging by an article which has been reprinted in Études Pédagogiques, the French follow the strictly logical method of teaching braille to blind children by introducing them first to the dots, then to the letters, and then to the groups of letters. Because of the fact that the written forms of French words tend to be longer than the written forms of English words, it might conceivably be necessary to use slightly different methods for teaching reading. This would probably be even more necessary in the case of German.

Summary: There are three methods now in use for teaching beginning braille reading—the letter method, the letter-word method, and the word method. Although the letter-word method is used by approximately half of the teachers who co-operated in the 1926 survey of reading methods, more than a third of the teachers used the word method. Many devices are used for teaching the braille dots and letters, the majority of these devices being variations of the pegboard. Most of the teachers who use the word method

introduce contractions very early, sometimes even in the first grade.

Despite the advantages of the word method in the teaching of blind children, it has some limitations, since braille material covers more space than does equivalent material in ink-print, and since the child's fingers must travel over the whole of each braille line instead of grasping its meaning in units as does the eye. The American Foundation for the Blind and Perkins Institution for the Blind are experimenting with the word method in order that they may gain more light on its value in teaching primary braille reading.

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CHAPTER V

Learning by Doing

"Learning by doing," far from being an empty phrase, typifies the most practical type of instruction for the education of the young blind. Nothing can take the place of well-planned, carefully-guided activity. Only through such activity can the minds of the children be stimulated to alert acquisitiveness; only through such acquisitiveness can these minds acquire the intelligent comprehension of an ever-increasing number of words, which is essential to the best types of reading experience. It was not Mrs. Malaprop's *lack* of words which marked her as an illiterate, but it was her uncomprehending *use* of them. Blind children must know and appreciate the meanings as well as the symbols of words if they are to feel the drive which will urge them on to more reading and to other activities.

In this chapter three media for providing opportunities for "learning by doing" are discussed, and suggestions are given for ways of employing these media. The first medium is that furnished by *projects which correlate reading with other subjects.* The second is that afforded by the use of *projects which are designed purely for the development of reading efficiency.* The third is that of *informal reading activities,* such as reading games.

If projects of any sort are to bring results which are commensurate with the time and labor devoted to them, they must be very thoughtfully planned and

carried out. This is most important to remember in any project work with blind children, because of the fact that any activity is likely to move more slowly than it would with children who have sight. It is suggested that each project be started very simply so that, whatever happens, it can eventually be completed. It is easier to elaborate a project after it is begun than it is to curtail it. Since the "average" child is the exception rather than the rule in primary classes for the blind as now commonly conducted, each child's shortcomings and needs must be borne in mind during the preparation of a project. If one or two of the children cannot be fitted into the group activity without interfering with the program of the rest of the class, then other constructive work must be provided for them. Before the class starts on its project the teacher should have a well-planned list of objectives for each of the subjects which the project is supposed to cover. It is assumed that most primary teachers will have had experience in the carrying out of projects with classes of seeing children, if not with classes of blind pupils. The life histories of such projects will not, therefore, be recited. Rather, projects will be suggested which are of particular value for use with blind children, and lists will be given of the objectives relating directly to reading.

Projects for correlating reading with other subjects. This correlation of reading with other subjects is practical if for no other reason than that it saves time in the school day for other work than that of formal reading drill. However, the two greatest advantages to be had from such correlation of subjects are first, that it helps the children to acquire that idea of the

relative importance of things, which is most essential to all worthwhile living, and second, that it reinforces the children's acquisition of word knowledge with a sense of warmth and interest which can be gained by very few children from a merely abstract discussion of words.

Ordinarily it is wise to have projects, involving more than one subject, so arranged as to extend over a period of time which will be not less than a week. Because of the amount of incidental assistance which must be given to most blind beginners, it is difficult to keep track of a complicated set of objectives for projects covering less time than a week.

Project I. Oral hygiene.

Time—1 week to 1 month.
For use during the period of preparation for reading.

Purposes:

1. To impress upon the children the need of proper care of the teeth.
2. To make sure that the children know how to care for their teeth.
3. To give training in motor co-ordination.
4. To ascertain whether the children know the meaning of the following words from Gates's "Reading Vocabulary for the Primary Grades":

tooth	never	feel
hurt	two	I'll
use	teeth	water

night	morning	brush
dirty	clean	whole
white	pretty	my
you	your	bad
ice-cream	ate	to-day

Properties: tooth-brush, tooth-paste, tooth-powder.

To be made by the children: large paper cut-outs of teeth, one tooth to have a hole in it, another to have a filling in it, others to be rough and discolored—colored yellow, and others to be clean and smooth—colored white.

If there are enough children in the class, each can represent a tooth in the lower jaw.

Management: The children and teacher work out the speaking parts together, the teacher writing them down so that she may rehearse them with the pupils individually. She has here an opportunity to see that the important words are inserted in the children's speeches, and to see that they know the meanings of them. The playlet may progress from dirty teeth to the appearance of a hole in one, to the filling of that hole and the appearance of a hole in another, to the reformed group of pretty, clean, white teeth.

Project II. The farm.

Time—2 weeks to 3 months.

For use during the pre-reading period.

Purposes:

1. To familiarize the children with the animals which will appear in the primer, through

the study of living specimens and stuffed models.

2. To give the children practical lessons in modeling, for the sake of reinforcing the impressions of the museum and the living models, and for encouraging careful observation of objects by means of the sense of touch.
3. To make sure that the children are familiar with the meaning of the following words from Gates's list:

bird	egg	kitten
corn	goat	chicken
duck	horse	dog
farmer	cat	farm
hen	dish	ground
bluebird	eye	let
cow	grass	

If the interest in the project continues to be lively, other words may be added to this list indefinitely.

Properties: Museum models or real objects; "Plasteline" and flat stick for modeling; table or cabinet for arrangement and display of models.

Management: A barnyard is laid out on a tabletop and fenced off with a "Plasteline" stone fence, or real pebbles can be used, cemented together with "Plasteline." A box at one end, with a door and windows cut in it, is the front of the barn. Each child is commissioned to study one animal and model it. Before the modeling is finished, the children have learned the

way grass grows, and have put a substitute for grass in one end of their barnyard. Moss of different sorts is fascinating to many blind children, and makes a good substitute for grass and swamp weeds. As the teacher finds that the different children have become sufficiently familiar with certain words on her list, she can shift the emphasis to other listed words or to new ones.

Project III. Bazaar.

Time—one term.

For use during the initial period of reading instruction.

Purposes:

1. To furnish an objective for hand training.
2. To supply an incentive for a careful study of the objects to be made.
3. To give sufficient practice to insure the recognition of the following words as wholes when they appear in the reading.
4. To furnish the necessity for writing groups of letters in words, as soon as the individual letters have been learned.
5. To give an opportunity for meaningful repetition of writing experience.

apron	work	best
cap	five	make
seat	black	look
better	bag	many
buy	dish	six
lay	stick	blue

ball	hat	pretty
drum	soap	mat
name	box	hold
big	seven	stop
made	brown	four
please	candy	ten
one	bring	pin
show	help	basket
two	start	cloth
eight	three	needle
yellow	nine	marbles
cent	green	reins
money	chair	ticket
tag	paper	book
jar		

Properties: old cloth (such as sheets, towels)
yarn (firm and heavy)
darning cotton
darning needles
wooden crochet needles
large, vari-colored pins
much string, in pieces
orange crates
cigar boxes
strawberry boxes
spools
clothespins
ice-cream containers — round
cents
nickels
dimes
"Plasteline"
colored papers
paste
glue
blunt scissors
crayon
braille slates
styluses
braille paper — light weight

Management: Much of the preliminary work on this project may take the form of busy-work with

which to keep one part of the class constructively occupied while help is being given to individual children. As soon as each article is made, the child should learn to write its name, in order that he may label his product with the suitable name and with his own name. Unless there is some special reason for doing otherwise, three or four articles of a kind are as many as should be made by a class of fewer than ten children. As the articles are finished, short sentences about them should be written by the children, the sentences to be corrected by other pupils. These sentences can be bound together to serve as a descriptive catalog. Toward the end of the term, the children will write the signs for the booths, such as "Beds, green, red, yellow—Ten Cents." During the term the children who have no money to spend should be given opportunities for earning a little, in order that they may have not only the satisfaction of earning, but also the opportunity to gain experience in spending their money. Likewise, it will save them from unhappiness when the others are making their purchases. All the children should be taught how to distinguish the cent, the nickel, and the dime, by the feeling. After the bazaar is over, two or three writing lessons and as many reading lessons should be based on the children's purchases, or on the story of the whole project, or on suggestions for the next class to follow.

While they are making the products to be sold, the children should be shown how to work from models, just as do grown-up sculptors and artists. The little girls who make the aprons should follow the model which has been made by the teacher; the children who make tickets should study the size of real tickets and

find out what is written on them. Although they must work from models, they should be encouraged to express their own originality, rather than be required to follow the models too closely.

By way of suggestion, the apron should be made from a square piece of cloth so that the hem will be straight, as it is in the accompanying illustration. The bed in this picture is made from a cigar box, with spools glued on for legs and clothespins glued to the top for posts. This bed, which was bought by the writer at a first-grade bazaar in a Cleveland public school, has two mattresses and a pillow which were also made by the pupils of the class. It might not be wise to have blind children take as fine stitches as would be necessary for such small articles, but it might be possible to use paste instead of needle and thread. The marbles which are shown are made from "Cementint," a colored substance which is easy to handle and does not need baking. The jar is made from the same material.

In order to be sure that every child is learning all the words, it is advisable to have "identification contests" and "completion tests" which require the picking out of the correct word from a pile of other words, or which require written answers. In learning to read and write the words listed above, individual children, and probably the whole class, will incidentally learn other words. They should be tested on these words, too, and should be given credit for knowing the ones they remember well.

Every member of the class should at the end write a story of this project, with the promise that the best

Ready for the Bazaar
Apron, Drum, Bed, Marbles, Ticket, Chair, Jar

stories will be bound in book form and kept for the next class to read and profit by.

Project IV. Indian Life: A Play.

Time—2 weeks to 1 month.
For use during the period of rapid growth in fundamental attitudes, habits and skills.

Purpose:

1. To instruct the children with regard to the most obvious differences between the Indian's mode of life and the white man's.
2. To fix these lessons in the children's minds by repetition, through writing, reading, and acting.
3. To give the children training in the use of constructive imagination.
4. To give the pupils experience in writing connected material that is of some length.
5. To train the children to read critically, through criticism of each other's papers.

Properties: Tepee, to be made by the teacher with the help of the children
Indian suits and dresses, to be bought or improvised with the help of beads and feathers
Sticks to be arranged as for a fire
Pointed and forked sticks for use in cooking
Water jar
Doll strapped to a board to represent a papoose
Moccasins
Small shells for wampum
Large sheet of heavy paper cut to resemble one side of a fence

Paddle, a real one or one made from a board.

Management: Reading of Indian stories by the teacher, with discussion, together with the reading of other stories by the children. For the teacher's reading, "Old Indian Legends" by Zitkala is suggested. It is published in ink-print by Ginn and Company, and is also printed in braille Grade One and a Half by the American Printing House. "Stories to Tell, Indian Nature Myths," published by A. Flanagan, is an interesting collection of stories by Julia D. Cowles. Suitable stories for the children to read are:

Indian Why Stories, by Frank B. Lindeman. Scribner's and the American Printing House for the Blind, Grade One and a Half.

The Magic Feather and Other Indian Tales, by various authors. American Printing House for the Blind, Full Spelling.

The White Indian Boy, by E. N. Wilson. World Book Company and the American Printing House for the Blind, Grade One and a Half.

When the children have had the opportunity of learning from books something about the life and beliefs of the Indians, and have studied everything in the museum which relates to Indian life, they may take their choice between dramatizing one of the stories which has been read, writing a pantomime, and composing a play having more speech than action. The properties can be roughly improvised, provided the children know exactly what each improvization is supposed to represent. Aside from the actors, there should be a prompter, a coach, and a compiler or editor. The prompter, coach, and editor will be the ones who receive the most reading experience, and so should

probably be given less of the literary work on the next project.

Projects relating primarily to reading.

Project V. Compilation of a braille dictionary.

Time—Begun toward the end of the initial period and continued through the third period.

This may be a class or an individual project. It makes a very interesting group activity. The children may work together in odd moments to decide on the merits of definitions which are contributed by individual pupils; the group leader may assign to each child his part in the writing of definitions in their alphabetical arrangement, in the numbering of the pages, and in the assembling of the book. The words to be included in this dictionary should be those which have particularly troubled the class, or those which were entirely new to some or all of the members of the group. Before they compile the dictionary, or add to it, the pupils should each have two or three sheets of braille paper clipped together at the top, on which they can write new words and definitions as occasion demands.

Project VI. Oral Reading Contest.

Time—preparation to cover 1 term. For use during the third period.

Oral reading to the class during the term is considered as practice. The pupils sometimes listen without books, to see if the child who is reading sounds inter-

esting, and sometimes they read silently along with him in order to check his accuracy. Toward the end of the term a contest is begun which will last through a series of reading periods. First, the pupils are judged by their ability to read well what they have rehearsed, and then they are judged on their ability to read a new story. Rewards are given to the best readers, after a class discussion on the subject.

Project VII. Poetry and Prose Book.

Time—1 term, end of third period.

Original prose and poetry make up this book. During the term the pupils are looking for ideas about which to write, and are experimenting with poems, short descriptions, and stories, which are judged by the teacher and class. The best specimens of original poetry and prose are incorporated in this book, which is to be put into the grade library for the edification of future classes. The braille writing in this book must, of course, be very good.

Reading games and exercises.

During the *first period,* that of preparation for reading, the reading games will really be vocabulary games. There are two "recognition games" which may be played frequently and with unimpaired interest. One involves the recognition of objects by touch, sound, or smell. The other is more difficult, since it requires the recognition of objects from the description of them. In this latter game the descriptions are usually made by the teacher, but once in a while there may be a child

in the class who can describe things either from memory or with the object in his hands.

Action games are usually full of interest for the children. In this period the game may be to see who can get into action first, or keep in action the longest, or do what he is told the best. Commands like "Jump in one place as long as you can," or "Bring me a book from the pile in the corner by the window," are excellent training in hearing what is said the first time, in moving with freedom, in locating oneself, and in understanding words. If a child whose knowledge of English is limited has the opportunity of playing this game for a while, he will learn the meanings of many words by watching the other children act and then acting himself.

In one school for the blind the primary children play a game which they call "mind pictures." One child starts the game by describing something which he has seen, or is imagining that he has seen. Then he turns to another child and says, "Johnnie, what is it that I have seen?" If Johnnie guesses correctly, he has the next chance to describe something and to call on anyone he may choose. This game is useful for extending the children's vocabularies, for training them in verbal exactness and clarity, and for refreshing the memories of all the members of the class.

During the *second and third periods* many of the games of the first period may be played with just as much interest, but with such variations as will require the use of braille words, phrases, and short sentences. Another game which may be played frequently during these periods is that of labeling things. The children are prepared for this game either by handling the ob-

ject, asking questions about it if necessary, and reading the braille name pasted on it, or by studying the object and at a later date studying the braille name, after having been told for what it stood. One game is to see who can take the most labels to their objects in the shortest time; another to have one child, acting as teacher, call on another child to carry the label given him to the object which it represents. Another occupation which can hardly be called a game, but which is practical, is to have the children write braille labels for the objects in the museum to replace labels that are soiled or pressed down.

The "riddle game" is fascinating to most children, and may be used to advantage by the end of the second period and throughout the third. Riddles, such as those in the "Riddle Book" by Lily Lee Dootson, can be copied on separate slips of paper and passed out to the children, two or three to each child. Similar riddles may be composed by the teacher to give drill on some particular word or group of words. If the children themselves display any ability at inventing riddles, they should be encouraged. Such riddles should be told only to the teacher, whose help will be needed in writing them. They will then be new to the class, and consequently really instructive.

Many "question" games can be invented. If each child is given some slips containing questions which he must either answer or get some other child to answer, the children will have reading drill while they will also actively use their minds. Sometimes the children can read their questions and then proceed to act out the answer, leaving it to the other children to guess what the question is. For instance, if the child has

the question "How does a rooster talk?", he gets up and crows, so that the other children can tell what his question was. If a child cannot read his question, he passes it to his neighbor, who sees what he can do with it. If he can read his question, but does not know how to answer it, he reads it aloud, and the teacher calls on one of the children to demonstrate the answer. The child with the question then guesses what the answer might be.

Another activity which is related to games and reading, but which can hardly be called a "reading game," is to learn how to play games through reading the directions rather than through being told orally by the teacher. This requires considerable transcribing by the teacher, although by using the Garin process (described in Chapter VIII) the directions for any given game need not be done more than once in five or six years.

The "classification game" is most easily managed if the words are slipped into the pockets of an educational rack, or into the grooves of a board such as the Boston School Board. Each child is given a pile of word slips, which he is to fit into the grooves under the word at the top which stands for the class to which it belongs. The child placing the most words correctly in the least amount of time is the winner. Some should be words which they have not seen in braille, although they are familiar with them in speech. They should be told to guess at the words which are new to them, trying to work them out by the sound of the letters. As an illustration, suppose that on the top line of the School Board the child finds the three words "house," "tree," and "garden." In a small box he

has a collection of slips which have on them the words "chairs," "twigs," "flowers," "branches," "tomatoes," "dining room," "door," "wood," "corn," "bark," "floor," "rug," "trunk," and "potatoes." Of these words, there are five which he has not seen in braille before. These are "window," "dining room," "branches," "bark," and "tomatoes," with all of which he is familiar in speech and experience. He is to sort these words according to the headings under which they belong. He arranges all the words which he knows, and then, with the help of silent pronunciation, tries to recognize these new words. The child who lists the most words correctly is the winner.

A variation of this game is to match descriptions, written in braille, with the words they describe. The descriptions may be a few lines long or they may be a page in length. They should always be clear.

Summary: This chapter emphasizes the importance of having blind children "learn by doing" in order that, if possible, the content of their mental lives may be as varied and abundant as is that of seeing children. Three ways are suggested and illustrated for providing constructive activities which further the teaching of reading to blind primary children. These three ways, together with their illustrations, are:

(1) Projects correlating reading with other subjects.

Project I. Oral Hygiene.
Project II. The Farm.
Project III. Bazaar.
Project IV. Indian Life.

(2) Projects relating primarily to reading.

Project V. Compilation of a Braille Dictionary.
Project VI. Oral Reading Contest.
Project VII. Poetry and Prose Book.

(3) Reading games and exercises.
1. Two recognition games.
2. Acting responses.
3. Identifying labels and labeling museum objects.
4. "Question" games.
5. Classification game.
6. "Mind picture" game.
7. Riddle games.
8. Reading directions for playing games.
9. Matching descriptions with objects.

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CHAPTER VI

The Exceptional Child

Before the primary teacher can fully realize the importance of her position as an instructor of a diversified group of blind children, she must be conscious of the fact that her group is diversified. Also, she must have some understanding of the reasons for this diversity. Then she must be informed as to the abilities and disabilities of the individual children in her class. The following pages are written with the hope that they may be found useful to the primary teacher in her dealings with the exceptional children who form the main body of her class. (It must be understood that the word "exceptional" as used in this book is meant to designate all children who are out of the ordinary, that is, children who are above the average as well as below the average, in mentality, personality, or special ability.)

Inferior learning ability, which is by far the most common cause for difficulty in reading, is the result of other more fundamental causes. On the basis of the Binet mental tests which have been given in schools and classes for the blind, it is estimated that at least 10% of the pupils are definitely feeble-minded. The majority of these fall in the groups which are usually designated as high-grade imbecile and low, middle, and high-grade moron. Most morons and many high-grade imbeciles with sight cannot progress beyond the ability to read street signs, simple directions, and such stories as employ only concrete ideas and elementary vocabulary.

Among *blind children* of the high-grade imbecile level of intelligence, there are few who are equal to the extra demands on attention and co-ordination which are inherent in braille reading. A few respond to the persistent efforts of some patient teacher, but it is often a question whether it is really a kindness to insist that these children learn something which is manifestly too difficult for them and of which they will probably make no use. If street names, window signs, prices, and other similar labels were in braille, there might be a legitimate reason for insisting that these children learn to read raised type. Since there is almost nothing for which such a pupil will use braille when he grows up, and since he will be able to do very little with it in school, such misuse of the pupil's and the teacher's time seems hardly warranted.

Curious as it may sound, it is nevertheless true that the time of a high-grade imbecile is precious, provided he shows any sign of being able to live outside of an institution when he becomes an adult. He learns so slowly that every moment possible should be devoted to teaching him those things which will help him to live as a respected individual in his community. Braille reading can rarely be classed among the things he should be taught.

Occasionally it happens that a child who tests at the imbecile level has learned to "read" the first or second grade reader, either by memorizing what he has heard or by innumerable repetitions. The fact that he has memorized what he has heard is no indication that he can read something which he has not heard. Neither is it of any special value to a child to be able to read simple material on which he has been drilled for three

or four years in succession. A child of low mentality whose reading is clearly not a thought-getting process should spend his time learning something which will bring him pleasure or make him useful.

Once in a while a child appears in a class of blind pupils who has low intelligence, but who has unusual ability at word-calling and in the recognition of kinesthetic stimuli. These "idio-savants" can learn to read quite easily as long as they can read orally. Through the first and second grades they may even be able to do fairly well in silent reading. Although they cannot be expected to *interpret* what they read, they can sometimes *understand* the facts in the selection. On this account it is worth while to teach them reading until they reach a grade of material which is beyond their comprehension. Thereafter, although they may read very difficult material, they will be reading for the pleasurable sensation they experience from the mechanical process itself, not for their understanding of the thought.

What should be the educational policy with *young morons* in schools for the blind is a problem which is complicated by the difficulty of deciding definitely the exact mental level of these higher types of feeble-minded children. Environment plays so important a part in the development or lack of development of a blind child that even a thorough mental test cannot always determine just how a child should be classed. If the test is properly given, a normal child is not likely to test as an imbecile, unless he is deaf as well as blind and is also unfamiliar with English. It does sometimes happen, however, that a child who gives every indication of being a low-grade moron when he

enters school, will so profit by the change in environment that he will show his real ability as a high-grade moron during the course of a few months or a year. His improved environment gives his modest native intelligence an opportunity to function. There have been a few cases in which a decided change in physical health has disclosed a high mentality in a child who had been supposed to be feeble-minded. The writer recalls distinctly her experience with two children whom she tried to test when they were still babies. Both were in an institution which was most unfavorable to the normal development of any blind child. Neither the boy, who was about three, nor the girl, who was a year older, could do anything on the tests. They could not talk, but it was impossible to tell whether their silence was due to fear or to feeble-mindedness. They also seemed to be suffering from malnutrition. Since it was impossible to judge their mentality, they were given a trial in a home for blind babies. Soon after their transfer both children began to improve, and the improvement continued for more than five years. The little girl, from apparently having no mental age at all, now tests more than a year above normal for her age. The little boy has not had such a phenomenal development, but he is now classed as backward rather than as a low-grade imbecile.

Such decided changes in mental states are, of course, quite rare. They are given here to emphasize the danger of jumping at conclusions about blind pupils in the primary grades, especially when our main basis of judgment is a Binet test, without supplementary evidence from records of home and personal history, and other aids furnished by a psychological clinic. They

reveal, as nothing else can, how serious is the problem which confronts the kindergarten or primary teacher who wants to give each pupil an opportunity to make good to the extent of his ability.

Although a change in mental rating from imbecile to normal almost never happens, a change from low-grade moron to high-grade moron is relatively frequent. It is these cases, and those of pupils who prove to be dull-normal rather than moron, which complicate the reading problem for primary teachers. There is seldom any more reason for teaching a low-grade moron to read braille than there is for teaching an imbecile. There is *considerable* justification for teaching a high-grade moron to read braille provided he does not show a special disability in reading. In a school for the blind a high-grade moron can be given enough extra training so that he can eventually obtain an elementary school diploma, although such a diploma can hardly be said to represent the same thing in the case of a moron as it does for a mentally superior child. In order to reach even the fourth grade, however, the moron must know how to read and write braille. Whenever a child of this level of intelligence begins to have difficulties in reading which cause the rest of the group to be held back on his account, he should be given extra training outside the regular class. There is nothing more hampering to the progress of normal and superior children in a class than the presence of a feeble-minded child.

Because of the relatively large proportion of pupils in primary classes for the blind who are subnormal, it is most important that the primary teacher so arrange the time she devotes to reading as to make it

unnecessary for the normal and superior children to be held back in their rate of progress. Nothing is more enervating to the normal child than competition with his inferiors. He becomes lazy because there is no reason for his being otherwise.

The actual reading method to be used with these feeble-minded youngsters will depend largely upon their individual peculiarities. Some should not be taught at all if they do not respond to one year's trial. Others are sufficiently interested in the mechanics of reading to be able to pronounce words both orally and silently once they have learned the phonetic elements. The degree to which they comprehend what they pronounce should determine how long the teacher is justified in giving to them time which she can spend to better advantage with the normal pupils. A few children cannot apply the technique of combining phonetic elements, but can learn to recognize by rote the shape of many words. Among the high-grade morons there are many who, with extra help, can be kept up to grade in reading without detriment to the rest of the class until they are well beyond the primary grades. There are more of this level of ability who can manage one grade in two years until they are in the fourth or fifth grade. This does not mean that they profit by sitting through the last half-year in a reading class when they cannot understand what it is all about. They may learn some of the stories by heart, however, with the result that they seem to know more than they really do when they reach that part of the course a second time. Better results are obtained by teaching such children individually, so they can make constant

progress, although that progress may be much slower than that of the rest of the class.

Feeble-mindedness is by far the most common reason for inferior learning ability. In every residential school for the blind, however, and in many of the day-school classes for the blind, there are found other causes for inability to learn. Two of these have already received considerable attention in Chapter III in the pages on remedial speech work. These causes are *extreme nervous tension* and *insufficient nervous tension, or inertia.* Among the children whose reading difficulties are discussed at the end of the chapter will be found some whose overwrought state was a contributing cause to their reading problem. Pupils of the uncontrolled type who are in this state of nervous tension start off on a unit of work with flying colors, but, because they overrespond to everything, they are soon exhausted, and become either excitably unstable or completely unstrung. Other children who are just as tense but who are repressed in their expression of that tension may not even be able to enjoy a thrilling start in their school work.

Probably most of the children who have not the energy to give attention to a school subject long enough to progress in it should be classified as "constitutional inferiors." There is no type of child more trying to the teacher of the kindergarten and the lower grades. On a mental test these children often rate as normal in general intelligence. They give the impression of being deliberately dilatory and inattentive in the classroom, and often seem to be maliciously causing trouble in the playground. Because of their fairly good intelligence rating, and the possibility that their for-

mer environment may be to blame for their attitude, the teacher feels that she must do her best to keep them up to the mark their intelligence indicates they should be able to reach. Yet they continually just miss the goal. Because of the demands which the learning of braille reading makes on the attention, they appear at worse advantage in the reading class than elsewhere. The teacher does not consider herself justified in placing them among the backward children, yet they are a great hindrance in the group of normal pupils. By the time these children of limited possibilities have reached the elementary grades they can be more easily recognized for what they are, since it has been impossible to make them any more capable. The primary teacher, however, realizes that if she immediately classifies a pupil as being "constitutionally inferior," she may be doing grave injustice to some nervously exhausted child who simply needs a wholesome, regular, active life to restore him to normal learning capacity, or to some child who has never been taught to control his attention or to hold himself to a task until it was finished.

Many blind children who, in their early years, are so lacking in energy that they give every sign of being constitutionally inferior to others of their own age, gradually respond to their changed environment and show their real ability to learn. It would seem to be obvious that before such children are subjected to the strain of learning braille, they should be built up physically, taught how to control their motor and kinesthetic reactions, and made socially acceptable to their group. If something should happen to arouse their interest in reading and writing before their de-

velopment of self-control warrants their undertaking regular class work in these subjects, then they should be given very short periods of individual instruction, which can be terminated whenever they show signs of exhaustion. Many children who are not constitutionally inferior, yet seem to be so, have become inefficient because they have reached a state of exhaustion after having been under great nervous tension. Others have been so persistently restrained from any form of normal activity by their parents or guardians that they have vegetated physically, and lain dormant mentally. Since it is almost impossible for anyone to distinguish between these types of children whose symptoms are so much alike, while their disabilities are so different, it is necessary to give considerable time to individual instruction, in order that advantage may be taken of each child's moments of alertness and spurts of improvement.

Altogether too many blind infants have been allowed by their families to acquire *tics* and *mannerisms* of which it is exceedingly difficult to break them. A blind baby, who cannot be diverted by what he sees, receives so much physiological satisfaction from these automatisms that he clings to them even in adult life, although they often distract his attention to such an extent that his progress in school is very slow and unsatisfactory. Sometimes blind babies develop tics in spite of the united efforts of the whole family to prevent them. The scattered attention which is characteristic of blind children who have dominating tics and mannerisms is often mistaken for an actual lack of capacity to learn. There is one mannerism which is more of a hindrance in reading class than in any

other; that is the habit of waving a hand back and forth before the eyes, often observed with children who have a little light perception. The flicker of light produced apparently gives so pleasurable a sensation that the children crave its frequent repetition. It is impossible to concentrate on both the flicker of light and the content of a reading-book at the same time; and since it is also impossible to wave a hand in the air and read a braille page simultaneously, the reading lesson is bound to suffer. Except when she is dealing with children who are blessed with a high degree of understanding and foresight, the teacher can train a child to overcome this particular tic only through the exercise of constant watchfulness and patience.

Inability to learn may be due to physical causes from which a blind child may be suffering even though he is attending class. Extreme *eye discomfort*, such as is caused by glaucoma, makes learning difficult for even the brightest child. Whenever it is known that a child is suffering from his eyes, his schedule should be so arranged as to make use of the moments when he feels the best. He should be kept in the classroom but should be put under no unnecessary strain. If the child's eyes hurt him much, he should probably be allowed to devote most of his time to those subjects which best serve to divert his attention from his suffering. There is no reason why eye discomfort alone should keep a child from being taught reading by the teacher's regular method, except in the case of a child who has already learned to read print before losing his sight. Such a child might easily be subject to the experience, reported by many adults, of suffering from

eye-strain as a result of reading with the fingers. The neural and muscular habits of reading with the eyes are so well-formed that they continue to function even after the loss of the eyes themselves. This constant strain on the nerves and muscles of the eyes, as well as on those of the fingers, results in quick exhaustion and sometimes causes actual nausea. Since the eye-reading habits of the young blind would not be as deeply ingrained as are those of the adult, the change to finger-reading should not cause them as much trouble. Yet there is probably temporary discomfort, not only in the eye but in the stomach.

In schools for the blind it is by no means uncommon to find children who are stupefied by the presence of some poison in their systems. Their *autointoxication* may be the result of any one of a number of different poisons or of a combination of a number of them. Whatever the cause of their poisoning, the children should be kept under supervision until improvement in their learning ability indicates that the poison is out of their systems. A case in point is a small boy to whom a doctor had once given bromide to quiet his pain. His mother, with a family of ten children, took to herself a widower and nine step-children, and often found it convenient to feed Freddy bromide whenever he began to whimper. When he arrived at the school for the blind his daily "bracer" was denied him, with the result that he alternated for a time between exceeding irritability and exceeding torpidity. Until his badly abused little system had recovered from the effects of his mother's ministrations, he was incapable of learning anything which required more than a moment's concentration. Learning to recognize braille

dots was impossible. Some improvement in his work was noticeable by the middle of his first year, and by the beginning of his second he was in full possession of his faculties.

Whatever its cause, autointoxication results in a numbing of the mind, which in its turn retards the pupil's progress in school. Many children are suffering from the presence of some poison in the system who are, nevertheless, forced to struggle along as best they may in the regular class. Ultimately they become so hampered by a feeling of inferiority that they are never able to throw it off. Such an emotional handicap interferes more with the blind pupil's attempts to learn reading and writing than with his efforts in any other subject in the primary course of study, because the reading and writing of braille require fine co-ordinations in the making of which it is all too easy to err.

In a school for the seeing it would be a dubious policy to allow children with serious physical disabilities, such as *brain tumors* or *oversecretion of the cerebral fluid*, to remain in the classroom with the regular students. In a school for the blind this cannot always be helped, except at the expense of much unhappiness on the part of the child. When children with these afflictions must be kept in the same room with the regular class, the teacher should see that they are not overtaxed in their individual schedules. A fifteen-minute reading period is probably the maximum amount of time which any child with brain trouble should be allowed at one sitting. Some begin to show signs of strain within five minutes.

Another physical condition which seriously inter-

feres with a child's ability to learn braille reading is *partial vision.* From the scholastic point of view, the totally blind child is more fortunately situated than is the partially blind one. It seems nearly impossible for the child with a little vision to refrain from using that vision to the utmost. Suggestions have been given in Chapter I for dealing with the partially-seeing children. It was pointed out that these children must either be furnished with some remarkably strong incentive to read braille with their fingers only, or else must be watched constantly in order to keep them from suddenly reverting to eye-reading. Reading braille with the eyes is trying to the strongest vision, and it is often positively dangerous to children whose sight is already in a precarious condition.

Speech defects and the *emotional disturbances* which are often responsible for them have already been so extensively treated in Chapter III that there is no occasion for dwelling on them here. Among the cases at the end of this chapter will be found some which are illustrative of both speech defects and emotional instabilities.

Having *ineffectual auditory memory* is almost a tragedy to a blind child, because so much of his mental life is dependent upon his ability to learn from the impressions he receives through his ears. However, most of what is thought to be poor auditory memory is actually poor attention to auditory impressions. In such cases the child can be trained to attend to what he hears, and can, therefore, profit much more by classroom instruction. Even in reading classes directions and explanations must be given orally oftener than would be the case in classes of seeing children.

For this reason, children who have not learned to attend to auditory impressions are likely to twist directions, meanings of words, and the phonetic sounds for letters and phonograms. These children are especially handicapped in a reading class where oral reading predominates.

Before deciding on a way to meet the problem of poor auditory memory, the teacher should ascertain, as exactly as possible, the underlying cause. Partial deafness requires a different course of action than does unfamiliarity with the English language or disease of some portion of the auditory area, although any of these causes will need to be treated individually.

A case in point is a little girl who was both slightly deaf and unfamiliar with English. She was also mentally retarded, although not feeble-minded, and had just enough vision to serve as a temptation to her. Margretta's first teacher had placed her in the front row that she might hear better, and was willing to stop the class at any time to explain to her the meanings of words. The effectiveness of this was qualified, however, by the fact that Margretta could not hear the teacher accurately even when sitting in the front row, and she lacked the English vocabulary to understand the teacher's explanations. Neither did she have the intelligence to make good guesses from the words she did catch. Margretta quickly learned to recognize the braille letters—with her eyes—but the phonetic elements were too much for her. Margretta's next teacher placed her close beside her, pronounced the phonetic elements directly into her ear, made a game of her learning to read braille with her fingers, and made liberal use of actual objects and large-sized pic-

tures to give meaningful content to words. Thus, by the end of her second year, Margretta was beginning to read with enjoyment, although she had not yet caught up with the rest of her class. By the end of her third year she was doing as well as any child with her degree of intelligence.

Insensitivity of the finger-tips is more common among blind children than has been realized. This results from the prevalence among them of physical disabilities which produce insensitivity, such as partial paralysis, loss of fingers, and affections of the nervous system. It is strange that tests of the responsiveness of the organs of touch in the finger-tips are not required in schools for the blind as a preliminary to the study of any subject which necessitates the use of the fingers. Such a test would take less than five minutes for most children, and would insure the early recognition of sense inferiority where it occurs. A child who cannot interpret clearly what his fingers feel is bound to have great difficulty in learning to read. If the insensitivity cannot be remedied the teacher's problem becomes one of finding an adequate means of conveying to the child the knowledge which the other pupils are able to get through finger-reading. In occasional instances pupils with an unusual amount of "stick-to-itiveness" have learned to read braille with some other part of the body, one using the lower lip, another the tip of the tongue. Although such a substitution cannot always be permitted, it will usually be possible to arrange for it in a well regulated school. It might make all the difference in a child's career—completion of his school course and ultimate independence, or his

dropping out in the elementary grades and being unprepared to support himself.

It sometimes happens that a child who has been recently blinded resents the necessity of reading with his fingers, and tries to protect himself from the undesirable task by assuming, consciously or unconsciously, an inability to distinguish anything with his fingers. Although such a manifestation is more likely to occur among the older pupils, it is occasionally observed in children who are mentally or physically young enough to be in the second and third grades. Whenever it seems possible that a child is thus assuming an insensitivity, he should be carefully watched and repeatedly examined by different tests. If it is found that he is unconsciously feigning an inability to perceive things by touch, he should be turned over to someone who is qualified to prevent a potentially neurotic child from becoming a truly neurotic adult. If, on the other hand, he is deliberately trying to deceive his teachers, more direct and sometimes rather firm methods are in order.

Children with *previous public school experience*, especially if they have lost only part of their vision, are temporarily somewhat handicapped in learning braille. This is true not only because they are as yet unaccustomed to interpreting with their fingers, but also because the learning of braille reading is accomplished by methods which are different from those to which they have been accustomed. Whenever possible, these children should be instructed in the same method by which they were taught in the schools for the seeing. However, if it is known that such a child has had poor success in learning by the public school method, then his entrance to the school for the blind is the favorable

moment for starting him again under another method.

In any school where the grade and class system is strictly adhered to, the *exceptionally superior child* is very likely to suffer, but this is particularly true in a school for the blind where there is bound to be great variation in the mental ability within any one class. Under the class system in a school for the blind, only the most extraordinary teacher can provide something which will interest the very superior child and yet be within the comprehension of the other pupils in her class. On the other hand, to hold a very bright child down to the learning rate of normal and subnormal pupils, in order to keep a class intact, is demoralizing to the bright child. Because he can keep ahead of the rest of the class by exerting almost no effort, he not only feels no need for hard work, but he forms bad study habits which will be hard to break as he grows older. Day-dreaming is the most insidious of such habits, and is the most difficult to overcome.

The retarding effect of *self-complacency* is most obvious in the acquisition of genuine skill in reading. It is especially noticeable in the case of children who are mentally superior to the rest of their group, but sometimes appears without any cleverness on the part of the child to justify its presence. It will usually be found that these pupils have been fed on a diet of unalloyed praise for their slightest achievement. The result is that they have acquired a belief in the folly of strenuous effort which has so coincided with their natural tendencies that the strongest remedial measures are insufficient. Because learning to read necessitates concentration and involves mental and manual activity, this subject is likely to suffer more than oth-

ers in which the need for effort is not so apparent at the first. The very bright child's self-complacency may be effectually shaken by putting him among his mental peers, or by giving him an individual schedule which will make it difficult for him to compare his accomplishment with that of his mental inferiors. The child who has become self-satisfied from too much praise for slight effort, or from being held back by his family in babyhood, is more of a problem to cure, although his handicap may not work such havoc, proportionally, in his future ability to make use of his intelligence. Among the cases at the end of this chapter will be found illustrations of pupils who have been hindered in their school careers by unwarranted self-complacency.

So much space has been given to the reasons for difficulty in learning primary reading because they assume much more important rôles in schools and classes for the blind than they do in schools for the seeing. It is seldom necessary for a teacher to spend the time to become well informed on the mental and physical peculiarities found among children, and such psychological and medical problems are not considered an important part of the teacher's training. As a result few of the teachers who enter the primary departments of schools for the blind are prepared to understand and to deal with the large percentage of exceptional children which they find there.

The following causes of reading difficulty, although very important, will be well enough understood by the teacher who is new in the profession of teaching blind children, so that there is little need for discussion of them here. Some of them have been considered in

other sections of this handbook, and probably all of them would be given sufficient attention in any first-rate teacher-training course. These additional causes are:

(1) Poor reading mechanics. This is much more serious and more general among braille readers than among ink-print readers.

(2) Wrong reading methods, from the point of view of the individual. Although most blind children can learn to read as well, if not better, by the word method, some children do not respond to it and should be tried with a method which is based on phonetic drill. Other less obvious deviations from the regular reading method are often necessary, and the teacher should be prepared to make them.

(3) Inadequate vocabulary is all too common among blind children. When it is the result of limited life experience or of unfamiliarity with English, then the deficiency should be remedied before reading is stressed, at least sufficiently so that the child may understand what he is trying to read. Otherwise, learning braille is a meaningless, uninteresting occupation which he must endure rather than enjoy.

(4) Lack of interest on the part of the child may have any one of a number of causes. One which has not been emphasized, yet which is much too common, is the lack of reading material which is suited to the different types of the child mind. The administrative policy of the school is often more to blame for this hindrance to the development of good reading habits than is the teacher herself. In many cases, however, superintendents would undoubtedly be glad to increase

their supply of good primary books if they were convinced by the teachers of the need for them.

The following *case histories* of children with reading difficulties are all based on fact. Only a few can be given because of the small number of accurately recorded diagnostic studies of the reading difficulties of blind children. Since many teachers have said that they wished they might have suggestions as to what to do with children whose reading difficulties were puzzling them, the writer has included here a few cases whose sources of trouble have been thoroughly studied, but whose cure has been only outlined or partially accomplished. In so far as possible the identity of each child has been concealed by changes in superficial characteristics or by drawing on the minor experiences of children having similar difficulties. The teacher is asked to look upon these cases as suggestive of appropriate remedial treatment rather than as scientifically complete studies. The children whose reading problems form the basis of this section of the chapter have all been studied by the writer, some of them having been observed over a period of three or four years. In some instances the course of remedial work which is outlined is that which *should have been* followed rather than the one which was actually followed. It is the desire of the writer to help primary teachers profit by the lessons which she has learned from her own failures in correcting reading difficulties.

Case I. Paul.

Why reported by teacher. Inability to remember the names and sounds of braille letters, phonograms and words; bad stammer; obstinacy.

Descriptive diagnosis. Investigation revealed that Paul had had many illnesses, including spinal meningitis and rickets, before he came to the school. It was tentatively decided that Paul's stammering must have had its origin during one of his illnesses, probably when he had meningitis or was suffering from the malnutrition which caused the rickets. The obstinacy for which the child had been blamed was found to be in reality a justifiable fear of his teacher, which not only completely inhibited coherent speech but also inhibited his power to move about. On this account, when he was struggling hardest to follow orders, he was incapable of giving any outward sign of his efforts, with the result that he seemed perverse and disobedient.

Also, as chance would have it, the reading method used by his teacher was highly phonetic. Success was largely dependent on the ability to pronounce the phonetic elements. This was a feat impossible for Paul, with the result that he made no progress in reading, became constantly more afraid of his teacher, and grew almost inarticulate whenever he attempted to speak.

It was found that Paul was so tense, nervously, and so stiff, muscularly, that it was impossible for him to relax at all. After consultation with specialists, it was decided that the first steps to be taken were to teach the child to relax and to help him rationalize his fear so that he could meet it squarely and overcome it. After indications of progress on these two points appeared, the reading difficulties would be taken in hand.

Treatment. Paul reported for remedial training three times a week, the length of the period varying from

fifteen minutes to a half hour, according to his nervous condition. For a while, part of each period was devoted to relaxation exercises, deep-breathing exercises, and marching to a metronome or to the rhythmical clapping of the hands. Later, through many periods, Paul practiced marching about the room to the sound of his own voice. After one semester was nearly over he was finally able to relax a little so that his arms felt less like iron rods and he could swing his legs freely as he sat on the edge of a table. He could also march forward and backward to his own rendition of Little Jack Horner. It was a number of months before he could speak freely even one short sentence. Over and over and over again, time after time, the same or very similar speech training was carried on. By the end of his first year of remedial work, Paul was able to start a rhyme beginning with a consonant without stammering, and occasionally he surprised himself by speaking in regular conversation without a stammer. Although the shock of this discovery always made him revert to a worse confusion of speech for the time being, it gave him confidence enough so that he voluntarily continued his remedial exercises at home during the summer vacation.

It took only a few weeks for him to understand the basis of his fear of the teacher, and within three months he had overcome the actual fear, but he was never able to lose his dread of the scenes which his inability to read frequently induced.

When Paul returned the next fall, he was somewhat more tense than he had been the preceding June, and his speech defect was apparently as bad as ever. Two

weeks sufficed for recovering lost ground, however, and then drill in reading was instituted.

The word method was used exclusively in teaching him to read. The work was so planned that little speech was required from Paul, his understanding of what he read being tested by completion sentences, direction tests, vocabulary tests, pantomime, and identification tests. Paul's progress was not phenomenal, but was fairly steady. He was so pleased over being able to read that he made use of every opportunity for indulging in his new achievement.

During the second year new relaxation exercises were introduced, speech drill was continued, and at least forty minutes a week was devoted to drill in reading. By the end of that year Paul had become almost normally supple, could speak many minutes without stammering, and was ready for the second grade reading class.

Partial release from fear, and learning how to relax had made it possible for him to benefit from speech training. Improvement in all his other difficulties then made it possible for him to learn to read as long as he was not required to make extensive use of what was, in his case, a defective mechanism—his mechanism of speech.

Case II. Bobby.

Why reported by teacher. Inability to do anything in reading, and the possession of such an inhibiting fear that he was unable to utter a word when adults were around.

Descriptive diagnosis. When Bobby was first taken

under observation it was found impossible to give him a Binet test, because his extraordinary fear inhibited every effort to speak. Since he had considerable sight, he was also tried on the Pintner-Paterson Performance Scale, but could do nothing at all with that. At another period, when the examiner had left him to his own devices and had her back turned to him, he voluntarily put together the Healy Puzzle "A" and the Goddard Form Board, but could only look at them and sob when asked to do them over again for the examiner.

Treatment. It was obvious that before his speech defects could be treated he must be freed from the fear which made speech almost impossible, at least freed to such an extent as would allow him to speak. Since his emotional state made it impossible for him to do first grade work, he was put into the kindergarten under the direction of a very patient teacher with a remarkable understanding of children. The suggestions of a specialist in mental hygiene were obtained, and every effort was made to give the boy confidence in the adults who seemed to inspire him with such dread. Although sometimes unable to speak when playing with the other children, he was never inhibited in physical activity at such times, being one of the most active boys in the school.

For one year the kindergarten teacher and the psychologist worked to loosen the grip of Bobby's fear. Between Thanksgiving and Christmas, he became so interested in his work that he sometimes forgot to be afraid. At such times he would volunteer a whispered comment before he realized what he was doing. This seemed like a hopeful sign, despite the fact that after

each unexpected remark he would grow more timid than ever for a while. His teacher had wisely paid him very little attention—so far as he knew—and had allowed him to watch what the other children were doing until he started something similar for himself. Whenever possible she praised him for what he had done, at the same time offering suggestions for improving his handiwork.

While the teacher was patiently giving Bobby an opportunity to forget himself in his work, the psychologist was making use of every opportunity to gain the child's confidence. She let him help her make things, asked him to run errands for her, and took him on trips of investigation. Whenever possible, some other child with an active mind and a questioning attitude was invited to go along, in order to relieve Bobby from the discomfort of being the center of attention.

He returned from the Christmas vacation with a slightly increased confidence in the school and his teachers. At times he could even bring himself to answer questions, although when he did manage to do so it was always with a burst of voice and speech that sounded exceedingly rude and was sometimes misunderstood by people who did not know of his difficulties. About this time he also began to have spells of being physically violent, as though the slight relief which he was experiencing from his fear made it necessary for him to burst through his repressions explosively.

Soon after the opening of the spring term, Bobby paid a voluntary visit to the psychologist to ask a question. What that question was, however, has never been discovered. After he had said the first two words

—"Can I. . . ."—he could say no more, and stood suffering visibly for a minute. When the psychologist tried to help him out, he burst into uncontrollable weeping which lasted for some time. The one redeeming feature of this episode was the fact that the child had come voluntarily. Soon after this, regular visits to the psychologist's office were begun. During the third visit, Bobby tried again to ask a question which he could not finish. He was so close to the nervous outbreak which he had experienced before that the psychologist decided to forestall it by conducting a one-sided discussion with him. She explained to him that she was very proud of him for the effort he was making to talk as freely as did the other boys, and that she was sure he would soon be able to accomplish his purpose. She asked him if he would like to come over to the office two or three times a week and play some games with her. When he bobbed his head eagerly, she asked him if he would also like to keep track of his height and weight in order that he might see how fast he was growing. To this he responded with a loudly sputtered affirmative sound. For a couple of weeks after this he cut paper, picked up scraps, tried form-board puzzles, dusted furniture, and did other things about the office until he felt completely at home there. Soon he volunteered bits of information or made happy exclamations over his added ounce or his increase in lung expansion.

During the second semester of the school year another effort was made to teach Bobby to read in the regular class. Although he learned a few words his progress was exceedingly slow, as a few minutes' effort in trying to read aloud paralyzed his organs of

speech. Just about the time he was dropped from the regular reading class he had gained enough self-confidence and self-forgetfulness in the psychologist's office for another step to be taken in his training. She therefore suggested that they surprise the teachers by learning to read a number of words and sentences in braille. He agreed, with obviously qualified approval.

In order that his reading should be as little hampered as possible by his difficulty in speaking, she made a number of braille labels for familiar objects around the office, and then taught him to connect the braille word with the object by means of actions rather than speech. If he wanted the braille word for any object in the office it was given to him, since it seemed better to fit the braille to his interests rather than to the requirements of a primary vocabulary list. This resulted in his learning a few long words with which the average eight-year-old is not supposed to be acquainted, such as "spirometer." Around that word, however, were built sentences, questions, and directions which gave him practice on many words which would be immediately helpful to him in a regular reading class. At the end of the year he had between fifty and seventy-five words at his command and could recognize a few simple phrases.

Just before the close of school, in June, he was given the Irwin-Hayes Binet test and attained a score which classified him as dull-normal. This score was thought to be too unreliable to quote, because of the fact that he was still suffering more severely from fear than was any child who had come to the school for a number of years. Subsequent tests have all given the same score, however.

The next autumn Bobby returned to school oppressed by the same fear, but apparently with no set-back from the stage of recovery he had reached in June. His reading work was reviewed by the psychologist who was to be his diagnostic teacher for an indefinite period of time. He reported for lessons at least three times a week, each lesson lasting as long as he could work without an increase in nervous tension. Either at the beginning or end of these periods he was given a little drill in pronunciation. Later he was given a short poem to read which he recited for two boys, after a painful effort to break through his inhibition against speech. This accomplishment was a great encouragement to him, with the result that further speech training became a trifle easier.

His reading seemed to progress independently of his speech defects, after he had once been able to speak freely at all. Reading practice continued on word and sentence slips for over a month, because the sight of a book seemed to stop his thinking process. As soon as possible, however, whole paragraphs were written on half-sheets of paper, and these were followed by whole pages of braille. These pages Bobby fastened together to form a book, which he reread from time to time. This seemed to take away his fear of a whole book, and soon after Thanksgiving he was given the Beacon Primer, although no phonetic drill was used. As he had been in the regular writing class since the beginning of the year, writing was correlated as much as possible with his reading of the primer. If he came to any words he did not know, he copied them from his book and gave them to the psychologist who wrote

out an explanation of them. This written explanation formed part of the next reading lesson.

Throughout this second year of special training Bobby was taught, to a large degree, by pantomime and by every other means which did not require speech. Whenever he appeared to be more at ease than usual, the opportunity was used to give him a little practice in oral reading. Toward the end of the year, he had read the primer and the first reader and was ready to enter the regular second grade the next year.

Bobby's case has been treated at some length because it illustrates so impressively the part which fear may play in the lives of blind and partially blind children. Bobby's fear had nothing to do with a dread of being hurt physically, nor was he in any sense a coward. Nobody knows the cause of his fear, but everyone who worked with him witnessed the suffering it caused him. From the point of view of his school work, it made reading and arithmetic impossible, and because of the contortion and tightening of his muscles when he tried to talk, his speech assumed many undesirable qualities which special training over a period of years has not entirely eradicated.

Case III. Michael.

Why referred by teacher. Inability to read, for which inability there was no apparent cause.

Descriptive diagnosis. Michael proved to be a strictly normal ten-year-old boy who had been retarded in entering school on account of his eyes. He was doing very satisfactory Grade II A work except in reading, in which he was doing nothing. He made no score at

all on the second grade silent reading tests that were available. On the Gray Oral Reading Check Test, Set II, he had made so many errors by the end of ten minutes that his paper was discarded as undecipherable. On Set I he made six errors and took 163 seconds. The standard scores for Grade I on Set I for blind children are five errors and 135 seconds. While Michael was taking the Gray test the examiner observed his technique, and found it very bad. He bore down so heavily on the braille that his finger-tip was white, and he felt over each dot of each letter before deciding on its number. By the time he had deciphered the last letters of a word, the first ones were forgotten. It was apparent that reading was to him a purely mechanical process of feeling over each letter as he came to it; reading for content was incomprehensible. Because of the pressure exerted in trying to distinguish the dots, accurate interpretation of the letters was difficult.

Michael, who had been taught by the alphabet method, for some reason took his teacher's instructions to study dots more literally than did his classmates. He was a boy who wanted quick action in everything. Since learning to read by dots was the antithesis of quick action, he came to regard braille reading as a piece of drudgery which must be tolerated when necessary and shunned when possible.

Treatment. Since the class to which Michael belonged had made a satisfactory change from reading by letter to reading by words and phrases, his special drill consisted in practice in recognizing whole words and short phrases without stopping to distinguish the individual letters. For the first few days Michael did not co-operate with the special teacher in her effort to

show him how to read by wholes. The fourth day he began to catch the idea of moving his fingers horizontally across the words instead of up and down over each letter of each word. After another two days he was willing to try the experiment of pressing lightly instead of heavily upon the braille.

During the first week of special drill, Michael's mind was only partly on his reading. The second week timed-reading was introduced, for which sets of words from the Horn-Shields Flash Cards were used. He was first given a list to study over, the teacher pulling each braille slip along under his fingers before he could run them up and down over the letters. Each word was presented over and over again, the order of the words being varied. After once recognizing all the words of a list he was drilled on them for a number of days, his rate and errors being recorded each day. By the time his rate on the set of cards known as A. I had improved from 94 seconds to 28 seconds his interest had become intense. Other sets of Horn-Shields Cards were used until he had learned to recognize quickly, by a horizontal, light movement of the fingers, nearly all of the words and phrases given in that series of flash cards.

Michael was then given a first grade story to read. Immediately he slipped back into the old method of reading by dots, excusing himself by saying that he could not be sure of understanding what he read unless he felt every dot. No amount of arguing or explaining could make him change his method. Finally he agreed to try the experiment of running his fingers lightly and horizontally over a whole line ten times in order to see what would happen. To his surprise,

he could read the line by the fifth trial. This gave him enough interest so that he was willing to carry on the experiment for each line of the page. Five days were required for reading one page of a first reader, but he was forming the valuable habits of reading for content, of running his fingers horizontally over the braille, and of pressing gently with his finger-tips.

The third week, when another story was begun, Michael read each phrase to himself before repeating it orally. After the story had been finished, he read it over silently under the watchful eye of the teacher, who corrected him whenever his mechanics became especially poor. By the time the story had been read twice he had acquired a good rate of speed. The next story he read silently, asking for help whenever he felt especially impelled to study a word in too much detail. Knowing that he was to be questioned on the story, he read it with care and was able to obtain a high mark on comprehension.

This type of training was continued for two months, at the end of which time his new reading methods appeared to be well established, and he had developed a live interest in reading for himself.

Case IV. Gertrude.

Why referred by teacher. Because her reading progress was retarded by an unwarranted self-complacency and because her inability to enunciate words distinctly made her oral reading very inferior.

Descriptive diagnosis. Gertrude was a nine-year-old girl who gave many indications of normal mentality, though she reached a mental age of only six on the

Irwin-Hayes Binet test. Her speech was that of a child of three, her facial expression that of a pleased, self-satisfied baby who felt no need for exerting herself. She was unpopular with the other children because her one interest was to center their attention upon herself. If they refused to indulge her caprices, she flew into a temper tantrum, which became steadily worse until she received the attention she craved. Her progress in school had been very slow, and her work in reading and music had been especially poor. Learning braille required a degree of concentration which diverted her thoughts from herself more than she considered necessary; therefore she had no interest in reading. Gertrude was the victim of a real infantile fixation.

Her parents were urged to co-operate with the school in its attempt to develop the little girl into a normal child, but they could not bear to subject a blind child to discipline, and they felt that only by loving her sufficiently could they make up to her for lack of sight. For more than a year every effort to help her was resisted both by Gertrude and by her parents. When nearly eleven she suddenly began to grow. As her height increased her infantile mannerisms became less and less attractive. The parents who would previously not allow her to develop, now became impatient over her retardation and appealed to the school to remedy the harm they had done. At last treatment was possible.

Treatment. Since Gertrude could not at first appreciate the changed attitude of her family, she spent many unhappy hours. Fortunately, however, she did not turn against her parents, but bent her energies

toward trying to please them. Since the perseverance of her teachers had carried her through second grade reading in spite of herself, she had a slight background of reading achievement. Being so near the foot of the class, however, made third grade reading very difficult for her. Special training was given her for three half-hour periods a week, during which she learned the art of concentration. At first, each of these periods was introduced by ten minutes of corrective speech work. As soon as her speech was reasonably clear of "baby-talk," she was given drill in phonics. When she had learned to use a phonetic element correctly, she was required to say it a number of times, to use it in many words, and to practice it by herself at night.

After her parents' change of heart, Gertrude's development continued to make itself apparent. During the course of the year her mental age score rose two years. Another year found her scoring as dull-normal, which proved to be her true mental rating. Her reading achievement improved rapidly until she was well up to her grade in marks. Her music showed the least improvement because of the bad throat habits previously formed.

Case V. Mary.

Why referred by teacher. Because she had progressed very slowly in reading, taking more than four years to pass second grade reading; and because she gave the impression of being definitely feeble-minded, in spite of ranking only as backward on the Irwin-Hayes Binet and other intelligence tests.

Descriptive diagnosis. Mary was a pathetic child of

eleven years who was described by one teacher as "making you feel that she might get somewhere sometime if she could ever wake up." Although she rated as backward on the intelligence tests, when her total score was considered, a careful study of the parts of the test showed that even in the lower years there were many tests which she had passed by a very narrow margin. The examiner had made a note to the effect that, judging by the inferior quality of Mary's accomplishment on the tests, it was doubtful if she could live up to her mental age in school achievement. Mary had a brother and a sister in a school for the feeble-minded, and her parents, although not vicious, were always in difficulties of some sort. Mary had had two physical examinations, neither of which showed any serious defects. But a neurological examination might have given a different record.

Treatment. It seemed apparent that Mary was a "constitutional inferior," whose inadequate endowment would prevent her from ever using her intelligence to the full. Since there was a possibility that the diagnosis might be wrong, however, special training was arranged. Three years later, although still receiving special training, she had been able to make only one more grade in reading achievement. The training consisted in patient repetition of each word or phrase, letter or phonogram, until the child's mind finally was able to attach meaning to it and until she could recall it a number of days in succession. Even then, constant review was necessary.

Only through the exercise of infinite patience could Mary be taught to read. Since she was never actively interested in anything, she could not be reached

through her interests. As it was impossible for her to focus her attention on anything, nothing was gained by holding her to one piece of work until she had finished it. Her degree of intelligence, although not normal for her age, should have carried her through the seventh grade successfully, though slowly. Because of her otherwise inferior endowment, however, she could go no farther than a special fifth grade class. Mary's showing in her reading is poorer than in any other subject, since braille reading makes the greatest demands on her attention. She has never been known to read from choice. It is exceedingly doubtful if Mary should be continued in reading, as she will never make use of it later and rarely uses it now.

Summary. In this chapter the chief causes for difficulty in primary braille reading have been presented and a few illustrative cases have been given. The factors which have special influence on the reading of blind children are as follows:

(1) High-grade feeble-mindedness
(2) Inadequate control of attention caused either by overtension or by lack of sufficient nervous tension
(3) Constitutional inferiority
(4) Physical disabilities, such as brain tumors, glaucoma, autointoxication, or partial vision
(5) Speech defects and emotional disturbances
(6) Ineffectual auditory memory
(7) Insensitivity of the finger-tips
(8) Inappropriate previous experience in a school for the seeing
(9) Self-complacency

Difficulties which are also found in schools for the

seeing, but which can be more easily remedied there, are:

(10) Poor reading mechanics
(11) Wrong reading methods
(12) Inadequate vocabulary
(13) Lack of interest

Case histories have been given, all of which are founded on actual cases, illustrating instances of the following difficulties:

Case I. Extreme nervous tension, serious speech defect, and an inhibiting fear.

Case II. Such intense fear that all speech was inhibited in the presence of adults, and all school progress impossible. Mild speech defects apparent in rare conversations with other children.

Case III. Lack of progress in reading caused by the child's being introduced to that subject by a method unsuited to his needs. Complete lack of interest in reading to himself.

Case IV. Lack of desire to progress caused by a complete self-satisfaction which had been unhealthfully fostered in the child by doting parents.

Case V. Inability to progress because of "constitutional inferiority."

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CHAPTER VII

Tests and Records

In so far as standardized tests make it possible to substitute fact for surmise, they are making of education not only a profession but also a science. For a time it seemed as though the uncritical assumption that educational tests could accomplish all things would make of education a pseudoscience, but this stage of overcredulity has passed, and tests are now being recognized for what they really are—pedagogical tools designed to help the educator to recognize and solve his problems. In no subject has the appearance of educational tests been of greater service than in silent reading. Now that a number of leading educators and psychologists have worked out a variety of ways for measuring silent reading ability, such testing seems almost absurdly easy. Yet, only a few years ago nearly every teacher assumed that the only way for testing comprehension of what was read silently was to have the selection reread orally, so that the teacher might tell from the child's "expression" what was the degree of his comprehension. Now, thanks to the evidence of tests, it has become almost a truism that the child's ability to read with expression may not coincide at all with his ability to comprehend what he has read. By using a number of standardized tests the teacher can find out not only the child's general comprehension of what he has read silently, but also his special points of weakness or of strength in that subject. It then remains for the teacher to find a remedy for the weaknesses, if such a remedy exists. If not, she fits her

requirements to what the child is able to do, thereby saving the child mental anguish, herself many hours of misapplied energy, and the school some annoying discipline.

Tests whose results are not used as a means for obtaining better work in the classroom are not worth giving. If the tests show that the class as a whole is above the average in grade achievement, then the test should result either in a continuation of what has proved to be a good method of teaching, or in a shift of attention to some other subject. If the class as a whole is below average, there is need for an investigation as to the cause. Is it that the teacher's methods do not fit this particular class; is it that most of the children come from inferior homes or have low mentality; or is it that they have not had proper preparation? If all but one or two of a class are doing satisfactory work, the class test should be followed, whenever possible, with individual diagnostic tests of these particular children, in order to locate their exact difficulty. Then it is left for the teacher to vary her methods of teaching these individuals until she is able to deal with their problems adequately. If test results are to contribute they must be *used.*

Another classroom tool which is proving its value is the graphic test record by which the pupil keeps track of his own progress and that of the class. These record charts or graphs are important allies to the teacher in her effort to provide incentives for the pupils. It is a rare child who is not interested in watching his own progress. If for no other reason than this, a record which he keeps for himself, or which he can at least watch, is much more stimulating to his interest

than is a record which is kept out of sight in a teacher's record book from which she occasionally reads warnings.

As practical tools for use in the average classroom, pupil records and class records may be above criticism. As tools for use in classes of blind children, they have certain limitations. The present organization of such classes permits of a great variety of abilities within the one class. If one ten-year-old child with a mental age of twelve and another with a mental age of eight are both given the same test, the chances are that the brighter boy will test far above the duller. If he does not, there is need for a careful study of the brighter boy. He may be ill, or he may be bored. If the brighter boy consistently stands far ahead of the duller boy, then his record sheet, when compared with the other, will give him more credit than he deserves, since a twelve-year mind should be expected to do twelve-year work, and an eight-year mind cannot do more than eight-year work. It is hardly fair to either child to allow these records to be compared, yet if the children have them they are bound to compare them.

In some schools for the seeing, the children are scored according to the way their achievement tallies with their mental ability. The results of their educational tests are figured on an age basis, and averaged. This average gives an educational age which, when divided by the mental age, represents an accomplishment quotient. The children's records are marked according to these quotients, thus giving to the dull boy whose educational attainment is equal to his mental age attainment, the same score on his record as that of the bright boy whose mental and educational ages are

equal. The dull boy whose industry has given him an educational score which is equal to his mental ability will have a *better* score on his record than will the bright boy whose achievement is below what should be expected for his mental ability. The accomplishment quotient works better in theory than in practice, even in schools for the seeing, and there are many reasons for not using it in schools for the blind. A large proportion of our pupils have been under especially trying environmental influences, which affect not so much their degree of intelligence as their ability to use that intelligence. As a result, their entrance into a better environment often increases their mental rating by several points—an unusual occurrence among seeing children. Also, disease may lower the intelligence of some pupils, and handicaps, such as missing fingers, may affect the educational test results of others.

However, in spite of the arguments against the use of pupil and class record charts and graphs, they can be made of practical service in classes for the blind without serious injury to the feelings of the children, provided that each child's attention is kept on his own record, and efforts are made to avoid undesirable comparisons. The incentive which these records nearly always gives the pupils is worth the expenditure of a little ingenuity on the part of the teacher to keep the bright boy from comparing himself too favorably with the stupid boy, and to keep the dull child from being unhappy over what he cannot help.

Standardized reading tests which have been adapted for use with blind children. Since most of the best tests of ability in primary reading make extensive use of pictures or other devices requiring sight, it has

been difficult to find suitable tests for adaptation to the needs of blind beginners in reading. During the last three years, however, two groups of reading tests have been adapted, which are not only proving very practical as tests of the reading ability of children without sight, but are also among the best reading tests for use with seeing children.

The Gray Oral Reading Check Tests are individual tests and are standardized for all grades, including the first. Since they require no writing, it has been possible to use even the first grade test very satisfactorily with blind children. There are four sets, Set I being meant for Grade One, Set II for Grades Two and Three, Set III for Grades Four and Five, and Set IV for Grades Six, Seven, and Eight. Each set has five forms of equal difficulty, so that the children can be tested at five different times during the year. Accompanying these tests is a diagnostic chart for each child upon which is to be recorded his detailed record of errors, at the time of each of the five tests. This makes it possible to watch his progress much more exactly than could be done if his only record was for time and number of errors. These tests are given to blind just as they are to seeing children except for the fact that the blind child has braille in front of him instead of ink-print. The teacher has an ink-print copy which is identical in content with that held by the child. On her copy she marks the child's errors as he makes them, and records the time which it takes him to read the selection. There is one point which must be borne in mind by the teacher. These tests do not measure *comprehension* of what has been read. They simply measure skill in the mechanics of oral reading.

GRAY ORAL READING CHECK TESTS*

SET I—No. 1

An old cat had two kittens.
One kitten was white.
One kitten was black.
The white one said,
"I want some milk."
The black one said,
"I want a mouse."
A little girl said,
"I will feed you some milk."

SET II—No. 1

A nest is in a big green tree. The mother bird made the nest. She put it on the branch of the tree among the pretty leaves. She made it of twigs, leaves, and grass. She put soft rags inside of it. The nest has five baby birds in it.

The nest is large and round. The little birds will not fall out. The nest holds the mother bird and the little birds, too. It is hidden under the leaves. The old cat cannot see it. He does not know where the birds are. He will not find them there.

The nest is the home of the birds. It is a bed for the baby birds. The wind rocks it back and forth. The nest is very strong and the wind cannot blow it down. The little birds eat and sleep all day. They will learn to fly very soon.

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*Size of type reduced.

INDIVIDUAL RECORD SHEET
Progressive Analysis of Errors in Oral Reading

Pupil's Name _____ Age _____ Grade _____

Types of Errors	No. 1	Daily	No. 2	Daily	No. 3	Daily	No. 4	Daily	No. 5	Daily
I. Individual Words										
1. Non recognition										
2. Gross mispronunciation										
3. Partial mispronunciation										
a. Monosyllabic Words										
1. Consonant										
2. Vowel										
3. Consonant blends										
4. Vowel digraph										
5. Pronounce silent letters										
6. Insert letters										
7. Pronounce backwards										
8. Rearrange letters										
b. Polysyllabic Words										
1. Accent										
2. Syllabication										
3. Omit syllable										
4. Insert syllable										
5. Rearrange letters of syllables										
6. Incorrect pronunciation of a syllable										
4. Enunciation										
5. Substitutions										
6. Insertions										
7. Omissions										
8. Other types of error (.....)										
8. Other types of error (.....)										
8. Other types of error (.....)										
II. Groups of Words										
1. Change order										
2. Add words to complete meaning according to fancy										
3. Omit one or more lines										
4. Insert two or more words										
5. Omit two or more words										
6. Substitute two or more words										
7. Repeat two or more words										
8. Other types of error (.....)										
8. Other types of error (.....)										
8. Other types of error (.....)										
Pupil's test record — Rate										
Pupil's test record — Errors										
Standard Scores for the Grade — Rate										
Standard Scores for the Grade — Errors										
Date of Each Test										

GRAY ORAL READING CHECK TESTS
Standards for Pupils without Sight

GRADES		I		II		III		IV		V		VI		VII		VIII	
	Set	R	E	R	E	R	E	R	E	R	E	R	E	R	E	R	E
Midyear	I	135	5	61	1												
	II			219	6	179	3	136	2								
	III							150	6	137	4	129	3				
	IV											152	6	180	5	151	4

On pages 159-161 will be found reproductions of No. 1 of Sets I and II, the scores for children without sight, and the diagnostic chart. It is interesting to note that the scores for errors were almost identical with those considered standard for seeing pupils. Although the time scores are higher, they are not as much so as was expected. It was thought that blind children would probably take from three to four times as long to read a given selection as would children with sight, but it was found that they took only one and a half to three times as long. In order to understand properly the value of these scores, however, it should be remembered that most of the pupils are older than are seeing children of the same grade. Therefore, although blind pupils shine in oral reading *grade* achievement, they do not shine in *age achievement.* This is no reflection on the schools or on the pupils; it is simply a note of warning. Teachers should hold up to blind children who are mentally capable the standards for children of their *age* rather than of their *grade.*

Stanford Achievement Test Reading Examination. This examination is composed of three tests which measure three units of silent reading comprehension: Word Meaning, Sentence Meaning, and Paragraph Meaning. There are two forms to this examination, which make it possible to check progress in silent read-

ing over a given period of time. The Primary and Advanced Examinations can be obtained in separate booklets. These tests are arranged on a point scale, children of each successive age or grade being expected to make a correspondingly higher score. The Primary Examination covers those items of the total examination which are within the experience of second and third grade children. The Advanced Examination covers all the items, and is to be given to pupils from the fourth grade through the eighth. It will be observed that these tests are not meant for use in the first grade. In a few schools the amount of writing required makes it impracticable to give them in the second grade.

A time limit is placed on these tests simply to indicate the maximum of time which should reasonably be spent on them. The time limit on the braille tests is rather high, but it was thought better to make allowance for the motor handicaps of many blind children, and for the mechanically clumsy braille implements, in order that these might be tests of reading rather than of motor ability. The time limits on the Primary Examination for pupils with sight are:

Test 1. Reading: Paragraph Meaning—
Work time 15 min., gross time 16 min.
Test 2. Reading: Sentence Meaning—
Work time 5 min., gross time 6 min.
Test 3. Reading: Word Meaning—
Work time 5 min., gross time 6 min.

A comparison of these with the following figures for blind children shows clearly some of the inconveniences of testing children without sight:

Test 1. Reading: Paragraph Meaning—
Work time 50 min., gross time 54 min.
Test 2. Reading: Sentence Meaning—
Work time 20 min., gross time 24 min.
Test 3. Reading: Word Meaning—
Work time 20 min., gross time 24 min.

Largely because of the bulkiness of the braille materials, the directions for giving these tests had to be considerably changed before they could be made suitable for use with blind children. The child with sight simply writes on the dotted lines of his test blank. This is impractical with braille tests, not only because of the exorbitant cost of such a use of braille booklets, but because it would be difficult to adjust the braille slate to fit the proper space. The blind child must, therefore, manage a braille test booklet, a braille slate and stylus, and his paper, all of which must usually be kept on one small desk with a slanting top.

The Stanford Achievement Test can be given to a hundred seeing children at one time, but as it is impossible to watch more than ten or fifteen blind children for lost styluses, dropped books, and twisted braille paper, the group should not exceed this number.

The scoring of these tests has been so carefully thought out that it is very objective in character. Since the scores leave little room for subjective judgment, anybody qualified to be a teacher is qualified to score these tests.

Grade norms are given in decimals of years, and age norms are given in years and months. This makes it possible to assign a very accurate level of attainment to individual seeing pupils upon the basis of a group test. Because of the many handicaps other than blindness to which many blind children are subject, these

figures must be interpreted in terms of what is known about the child's history and about his rate of advance since he entered school. Since it is possible to figure a child's Reading Age from these test scores, this can be compared with his mental and physical ages to see if his attainment is satisfactory. (It might be noted here that the correlation between mental ability and these three reading tests is so high that they are sometimes used in schools for the seeing in place of a group intelligence test.)

The results which have so far been obtained from blind children on these tests show that blind children are somewhat superior to seeing children in the second and third grades, and approximately on a par with them in the higher grades. The following table, which is derived from one given in the writer's pamphlet, "Adaptation of Educational Tests for Use with Blind Pupils," shows how blind children vary from the average when one considers chronological age attainment.

STANFORD ACHIEVEMENT TEST: PRIMARY READING EXAMINATION

Per Cent of Pupils Retarded or Advanced on the Stanford Achievement Test, in Subject Age over Chronological Age

	Advanced				Retarded			
	3 yrs. plus	2 yrs. plus	2 mos. plus	At Age	2 mos. plus	2 yrs. plus	3 yrs. plus	4 yrs. plus
Prim. Ex. Read. Age	2	7	10	5	85	60	44	33
Prim. Ex. Dict. Age	1	10	19	10	71	60	44	32
Adv. Ex. Read. Age	2	11	16	4	80	70	50	37
Adv. Ex. Dict. Age	2½	6	14	4	82	71	53	23

Ex.=Examination.
Dict.=Dictation.
Read.=Reading.
At Age=Within 2 mos. of exact chronological age.

Plus = From 2 mos. above or below chronological age to 2 yrs. above or below.

Note: The ink-print material for the Stanford Achievement Test is obtainable from the World Book Company, Yonkers-on-Hudson, New York, or from the American Foundation for the Blind. The braille for this test should be ordered from the American Printing House for the Blind, Louisville, Kentucky.

Educational tests not yet adapted. So far as is known the Gray Oral Reading Check Tests and the Stanford Achievement Test Primary Reading Examination are the only reading tests which have been standardized for use with blind pupils below the fourth grade. However, examples are given below of standardized tests which can be roughly adapted by teachers who feel the need for more test material. It is possible that some of them will be adapted by the American Foundation for the Blind or some other organization in the near future. Meanwhile, suggestions for adaptations are given below.

Gray Oral Reading Tests. This test is the forerunner of the Oral Reading Check Tests. It consists of a series of twelve paragraphs carefully graded. The pupil's time and errors are recorded and a composite score is obtained. The test is administered in much the same way as the Check Tests. The scoring is somewhat more difficult, however. Since there is only one form of this test its greatest usefulness lies in its service as a survey test. Paragraphs 1 and 2 are quoted below, in much reduced type:

1

A boy had a dog.
The dog ran into the woods.

The boy ran after the dog.
He wanted the dog to go home.
But the dog would not go home.
The little boy said,
"I cannot go home without my dog."
Then the boy began to cry.

2

Once there was a little pig.
He lived with his mother in a pen.
One day he saw his four feet.
"Mother," he said, "what can I do with my feet?"
His mother said, "You can run with them."
So the little pig ran round and round the pen.

Gray's Silent Reading Test. The three selections in this test are to be used with Grades II and III, Grades IV-VI, and Grades VI-VIII, respectively. This test is to measure both rate and comprehension. Each selection is arranged in three columns on a wide sheet of paper. When the pupil lifts his eyes from the foot of one column to the top of the next, the examiner has a chance to note his rate of reading. Comprehension is tested in two ways; first, by having the pupil reproduce the story, and second, by having him answer a list of ten questions about it. In the test for the second and third grades the teacher writes down the child's reproduction of the story as he gives it. Since no writing is required, and since the test is given individually, it is especially well suited for use with blind primary children. The only technical difference in the make-up of the test is that each column should be on a separate sheet of braille so that the teacher may note the child's time when he turns the page. This test may be obtained from the University of Chicago Press, Chicago, Illinois.

The first column of the selection for Grades II and III is as follows:

TINY TAD

Tiny Tad was a queer little fellow with only two legs and a short tail. He was nearly black, too, and much smaller than most tadpoles in the big pond. He could hardly wait for his front legs to grow.

Pressey Attainment Scales, Grades I, II, and III. These scales are published by the Public School Publishing Company. The scales for Grades I and II may be obtained in two forms. The reliability of these tests is not yet assured but promises to be high. They are especially suitable for use with blind children. Scale I has already been tried with one class of first-grade blind children, but since the pupils' scores were much higher than their daily work on reading would lead one to expect, it is probable that the directions were made too easy. One advantage of these scales is that they can be given as individual tests to those pupils who are unable to write with ordinary facility.

Scale I does not test the child's ability to comprehend the meaning of a whole paragraph, but it does give two good tests for measuring ability to recognize words. One test measures ability to recognize one sentence in a group of sentences; the other measures ability to recognize the extra word which spoils the meaning of a sentence. Scale II contains two reading tests, a spelling test, and an arithmetic test. In one sense the arithmetic test is also a reading test, since one very important element in written arithmetic is the ability of the pupil to read his problem correctly. The

two reading tests measure speed of reading and recognition of words. Although not so divided on the paper, Scale III really consists of three tests—spelling, reading, and arithmetic. The reading test measures ability to comprehend the meaning of paragraphs. There are seven paragraphs, each of which is followed by four questions. Every question is followed by a list of words from among which the child must pick the correct answer.

The following samples are given so that each scale may be the better understood:

SCALE I, TEST I. FORM A

1. is the you a said
2. do we come are ball
3. baby one with that have
4. good was on this his
5. mouse has your match bird

(Twenty-five groups of words in all.)

Directions for giving. (adapted)

1. Find the word "the" and keep your finger on it until I see if you are right. (Then be sure that each child has found the right word.)
2. Now look at the next row. Find the word "ball" and keep your finger on it until I see if you are right.
3. Now look at the next row. Find the word "one" and keep your finger on it until I see if you are right.

(Continue in similar fashion for the other rows, using the following words for each row: "Now look at the next row. Find the word ——— and keep your finger on it until I see if you are right."

Use the words listed below. As you go around among the children, recording their answers, do not tell them how they stand. It may be well to start with the statement that you cannot discuss their answers with them until the test is over.)

Scale II, Test II. Form A

(The directions for this test may be adapted so that either the child will write the answers or the teacher will check the location of the child's finger. It is probably better to have the children write the answers unless the test is given individually, or unless the children have not learned to write. The children are to record the extra word in the sentence.)

1. I ball see a boy.
2. See dog my pretty book.
3. I like to gun play ball.
4. I cat can see my doll.
5. I have ball a kitty.

Scale III, Test III

(Eight minutes is the time limit on this test for seeing children. Twenty-five minutes is a reasonable time limit for blind children if the test is given as a group test with written answers. If it is used as an individual test and is answered orally, fifteen minutes is probably sufficient.)

"Dorothy was walking slowly through the woods. Her path wound out and in among the tall trees. She could hear the squirrels up among the branches talking and chattering to each other. The air was fragrant with spring flowers and the little girl stopped to look for them. She hoped to find some to take home to her mother, for her mother was sick and her father had gone away.

She thought the flowers would make her mother very happy."

1. What did Dorothy find? trees birds flowers squirrel.
2. What did she hear in the woods? flowers squirrels bees plants.
3. Who could not come to the woods? father birds mother baby.
4. What did she smell in the woods? flowers squirrels trees ferns.

One important feature of these Pressey tests, as far as teachers of the blind are concerned, is the way in which each test is preceded by three or four practice items. Items 1 to 4 are usually designed to make the children know just what is to be done.

Informal Tests. Although only standardized reading tests should be used for checking the results of experiments or for assigning formal grades, many informal tests should be given throughout the year—tests which are made up by the teacher herself. The standardized tests have been constructed according to those principles which have proved best for testing the achievement of pupils in any given subject or in any branch of such a subject. In the future experimenters may discover other methods of measuring achievement which are as good as or better than those now in use. Until that time comes, however, the teacher will do well to model her informal tests after the patterns provided by the group of educators and psychologists who have made a special study of this matter.

These are some of the accepted ways of measuring what the children know or can do:

1. Sentence completion (word or paragraph completion).
2. Following printed directions.
3. Recognition of one item in a group of like or unlike items.
4. Answering questions referring to a given selection (question to precede or follow selection).
5. Reproduction of sense of selection.
6. Timing reading of selection (or of whole test).
7. Yes-No answers to questions.
8. Recognition of word to fit definition (or of definition to fit word).
9. Audience reading—timing of, noting of errors.

Care must be taken that no one method of checking attainment is used excessively, since no method tests all phases of reading ability. In schools for the blind, where the preparation of reading material demands such an undue proportion of the teacher's time, it is advisable to make some of the informal testing identical with the supplementary work, such as reading games, and the use of the educational charts. If it is certain that the child receives no outside help, then it is entirely permissible to have some of the pupils take completion tests on their educational charts or school boards while the teacher is working with another group of children. But timed tests cannot be given in this incidental way, even though they are informal ones.

Professor William A. McCall of Teachers College, Columbia University, and Dr. Lelah Mae Crabbs of the Merrill-Palmer School, with the assistance of a number of graduate students, have devised some "Standard Test Lessons in Reading" for Grades II-VII, inclusive. These lessons are grouped in "books," Book Two for Grades II-IV, Book Three for Grades

III-V, Book Four for Grades IV-VI, and Book Five for Grades V-VII, inclusive. The Manual which accompanies these test lessons gives suggestions as to the best way to use them. It also explains the proper way to score the children's results.

Test Lesson I of Book II is quoted here, so as to give some idea of the character of the lessons:

"Each year the little girls of Japan have a holiday which makes them very happy. It is called the feast of dolls, and is held during the early part of March. The feast lasts three days and during that time the little girls are allowed to play with all their dolls. These dolls are not only their own but those that belonged to their mother, their grandmother, and also their great-grandmother. So most of the Japanese girls have many dolls and are very careful of them. During the feast, the dolls are dressed in their best clothes and placed on stands so that people may admire them but not break them. When the three days are over, the dolls are put carefully away until the next year.

1. This holiday is called the feast of (a) kites; (b) flags; (c) rolls; (d) fishes.
2. The holiday is celebrated in (a) China; (b) Japan; (c) United States; (d) Germany.
3. Is the feast held in (a) May; (b) December; (c) June; (d) March?
4. At this time the girls play with their (a) dolls; (b) brothers; (c) pets; (d) toys.
5. How many dolls have the little girls? (a) few; (b) none; (c) one; (d) many.
6. How many days does the feast last? (a) one; (b) four; (c) three; (d) two.
7. Little Japanese girls handle their dolls (a) carefully; (b) carelessly; (c) roughly; (d) playfully.
8. At the end of the feast the dolls are (a) given

away; (b) kept on stands; (c) put away; (d) played with."

No. right	0	1	2	3	4	5	6	7	8	9	10
G score	2.1	2.4	2.7	3.0	3.2	3.5	3.7	4.0	4.3	....	....

There is a three-minute limit on each test lesson, although these are not primarily time tests. (An allowance of eleven minutes in the second grade and of nine in the third is probably sufficient for blind children.) They give full credit to the "slow but sure" child who cannot read well if he is hurried. Although the majority of children read better if they are kept up to a certain speed, a few children who cannot read rapidly because they cannot think rapidly, yet are normally intelligent, are seriously handicapped by time tests. This is not an argument against the use of time tests, however. They are an important part of the class reading program.

Some of the more recent readers contain informal silent reading tests, and their manuals give suggestions for the construction of others. Book I of the Learn to Study Readers gives many excellent illustrations of informal tests, samples of which are given here. Book I has already been put into braille by the Howe Publishing Society and Book II will be embossed within a short time.

Page 26. Riddles. Six riddles, the first of which is this:

"I can sing.
I can fly.
I build nests.
I am a ———."

Page 35. Completion sentences. The words to be supplied are given at the top of the page, the child fitting the proper word to each sentence.

"Find the word which belongs in each of these blanks:

A lemon is ———.
Iron is ———.
Snow is ———., etc." (Eleven sentences.)

Page 39. "What Animals Do You Know?

What animal has a trunk?
What animals have horns?
What animal has a bushy tail? etc." (Sixteen questions.)

Page 100. "Trees." "Can you tell which trees:

(1) give us small, red fruit?
(2) give nuts with a black, rough shell?
(3) give the best shade in summer? etc." (Twelve questions.)

Although it is not so easy to test *appreciation* of what is read as it is to measure comprehension, it is nevertheless possible and should be tried. The scoring will be even less accurate than in other informal reading tests, but will still be more reliable as a guide to the teacher than would her rough estimates made mentally and recorded without giving her an opportunity to compare impersonally the results of one pupil with those of another. Informal tests of literary appreciation, in the primary grades, may be constructed like other reading tests, except for the fact that the questions which precede or follow the selection should refer

specifically to the presence or absence of some quality within it. The questions should call for as simple and direct answers as possible, and should, therefore, *not* be ambiguous.

There is one type of reading ability which receives slight attention from the makers of tests and is made little use of in schools for the seeing, yet which is of fundamental importance to every blind person—that type of reading ability which has sometimes been called "hearing-reading" comprehension or "listening ability." The ability to "listen well" is extremely important to every blind person of any intellectual development at all. Especially is it important to the blind boy or girl who goes on studying after leaving the elementary school. The training which the children receive in constructive listening during their kindergarten years should not be lost through lack of use. Mention has already been made of the tendency, shared by blind and seeing children alike, to become hypnotized by the sound of the reader's voice, thereby losing much of value in the story.

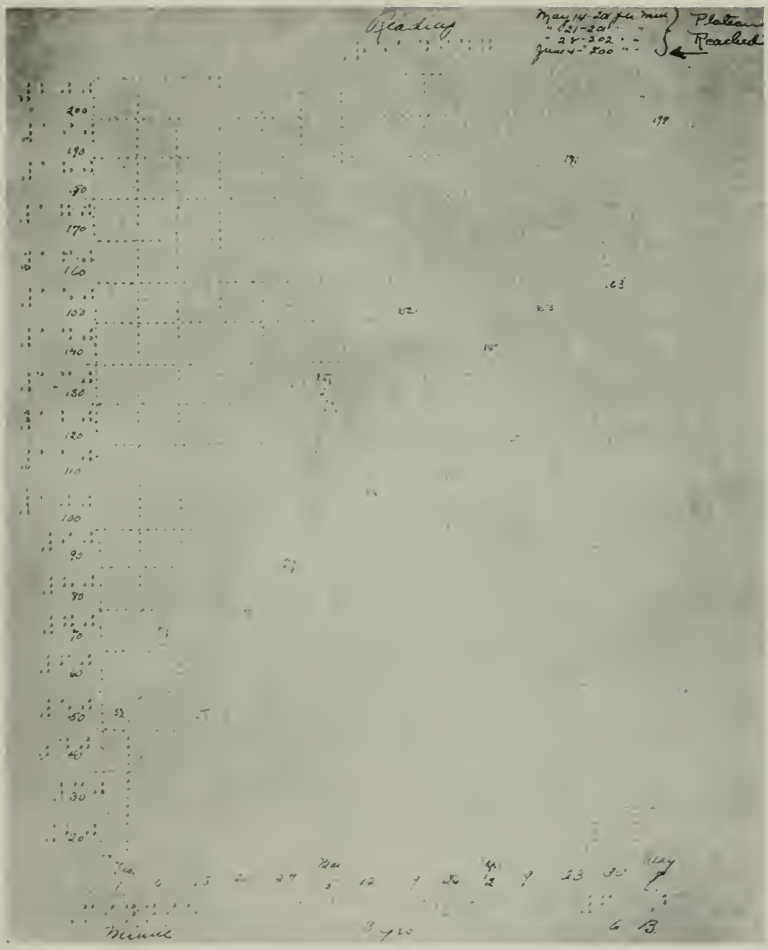
A practical way of testing listening ability in the first grade is to have on each child's desk braille slips containing the answers. After the story has been read and a question asked, the child will pick the proper answer for that question from among those on his desk. This answer may be placed at the top of his desk, with the following ones arranged in order under it, or it may be slipped into an educational rack or a school board. Another good method is to have incomplete sentences arranged on the school board, which are based on the story that is to be read. The pupils read the sentences before the story is read; then

after the story is finished they find the right answers in a box which is placed on their desks. There should always be one or two extra slips so that the last question will not be answered unthinkingly.

If the selection read to the children was "The Night Before Christmas," questions such as these might be inserted in the rack: "What night was it?" "How noisy was the house?" "How did Santa Claus enter the house?" The answer slips would be something like this: "The Night before Christmas," "very quiet," "down the chimney." The extra slips should be irrelevant, such as "the dog ran," and "a fox."

Records. The policy of having the pupils keep track of their own progress in school has only recently been favored. Now, however, its merits are becoming apparent and it is being employed extensively by educators of the seeing. A few educators of blind children have also tried their hands at manufacturing record sheets which can be read alike by the fingers and the eye, and have found the results to be well worth the effort. The supplement to Dr. S. P. Hayes's "Self-Survey Manual" contains a description of a graph which has been used by Miss Beulah Hulberg in her class for the blind in the Minneapolis Public Schools. A similar one is shown on the opposite page. The directions for making it are given in the following paragraphs, quoted from a mimeographed paper written by Miss Hulberg and circulated by the Foundation:

"The lines were made with a sewing-machine tracer, and the numbers were made with a braillewriter. Number 36 Dreadnaught Ledger paper was used, and each graph was 8½ x 11 inches in size, this being the size of the paper which would fit into the children's



Individual Record Card

Similar to the One Used by Miss Beulah Hulberg, Classes for the Blind, Minneapolis, Minnesota

note-books. Each week two graphs were placed on the board, one belonging to the pupil obtaining the highest speed for that particular week, and the other to the child securing the greatest percentage of improvement. The braille figures and words, giving name, grade, age, and speed of the pupil, were interpreted in ink so that anyone with sight would know at a glance which were leaders that week. These graphs were also taken home when the pupils desired to do so, as was usually the case, and this gave the parents a chance to keep track of progress. There was also a class graph, on which every child's score was kept. Number 1 Diamond Round-Head paper fasteners were used instead of dots, these fasteners being connected by means of string. Each child was given a number instead of having all the names on this graph. The graph for the class was also made of Number 36 Dreadnaught Ledger Paper, 24 x 36 inches, fastened at the top to a large sheet of heavy cardboard."

Other teachers in schools for the blind have used record cards made of heavy braille paper, with the subjects listed down the left-hand side and the dates across the top, and with the braille score for each test after its appropriate subject and under the proper date. The simplest way for putting in a braille score is to write it on a separate piece of paper and cut the paper around the number according to the size of the square on the graph. It can then be pasted into the right square.

When it is desired to record the completion of required tasks a graph which makes use of large stars is feasible. On heavy braille paper a graph is made with a tracing wheel, each square being large enough to

hold a star or a circle of paper. Along the left-hand margin, before each row of squares, the name of a subject is written in braille. At the head of each column of squares is the number of a task. As the tasks are completed a star is placed in the square representing that subject and that task. Since paper stars are usually too thin to be distinguished easily from the paper behind them, it is sometimes advisable to substitute circles or squares of heavy paper which will furnish to the fingers a definite contrast from the paper background.

In order to express records by means of curves, the tracing wheel is brought into play. The lines of the graph as well as of the curve itself are raised by running the wheel over them, on the *reverse* side of the paper. Whatever is written at the left and at the top of the graph is printed in braille. As a substitute for the raised line of the curve, string or narrow strips of paper may be glued to the graph. If the record is to be kept on the bulletin board, the curve may be represented by string which is held in place by pins. (See illustration opposite this page.)

For other records which are to be kept on bulletin boards or on small individual boards, bar diagrams may be made by rows of large-headed pins. Bar diagrams are also made by lines of braille dots, but these lines seem to lack impressiveness.

The braille on these records should be written with a braillewriter whenever possible, since the spacing of a braille slate is difficult to fit into the spacing of a graph.

Summary: Of the standardized educational tests which have been adapted for use with blind pupils, only

two series can be used below the fourth grade. These are The Gray Oral Reading Check Tests and The Stanford Achievement Test Reading Examination, and Dictation (Spelling) Test. The Check Tests, which are to be given individually, are arranged in four sets of five numbers each, thus making it possible to test the pupils at frequent intervals throughout the year. These tests are accompanied by a valuable diagnostic record sheet for each pupil. The Stanford Reading Tests come in two forms, so that the pupils may be tested at the beginning and at the end of a given period of time.

For many reasons the proper adaptation of educational tests for use with blind pupils is a difficult and tedious process. However, until more adaptations are available, there are a few excellent tests which may well be employed by the teacher for use with her own class. Among these are : The Gray Oral Reading Test; The Gray Silent Reading Test; The Pressey Attainment Scales, Grades I, II, and III; and the McCall-Crabb Standard Test Lessons in Reading.

Informal tests should be used frequently to check the results of instruction in specific points. These may be modeled after such tests as the Standard Test Lessons in Reading, The Gray Oral Reading Check Tests, or The Stanford Achievement Tests, or after the informal tests which appear in the newer reading books, such as The Learn to Study Readers. In the preparation of the material it is essential to keep in mind what points are to be tested.

"Hearing reading" tests should be given often, since the ability to listen constructively is of fundamental importance for all blind people. These should be sim-

ilar in structure to the silent reading tests, the only difference being that the children answer questions on what they have *heard* read rather than on what they have read for themselves.

It is helpful to have class and individual record cards for the children although, because of the complexities of braille, it is usually advisable for the teacher to do the actual recording on the cards. These record blanks which they themselves can watch arouse considerable interest on the part of the children. A tracing wheel may be used to raise the lines of a graph. Large-headed pins, paper stars, or small pieces of heavy paper are practical as substitutes for the bars of a bar diagram. Raised lines, string, or narrow strips of heavy paper may be used for the lines of a curve.

Educational tests and objective records are valuable tools for encouraging progress on the part of the pupils and in adequately measuring that progress. This is true in spite of the fact that the results of tests as expressed on the records can never be so reliable as they would be for seeing children. In order to be fair to pupils in schools and classes for the blind, the results of each child's test must be interpreted in the light of his mental age, his past history, and his handicaps other than blindness. Because the majority of blind children are "exceptional" rather than "average," the personal judgments of their educators will always count in determining their real progress and their corresponding treatment.

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CHAPTER VIII

Materials for Use in Teaching Primary Braille Reading

The suggestions in this chapter by no means exhaust the list of possible equipment. Their purpose is to indicate the types of material which are most helpful in teaching reading to blind children. In the case of school museums, financial considerations will doubtless govern the cost and the size of each. Also the location of the school or class will likewise affect the make-up of the museum, since the needs of rural and city children differ somewhat, as do those of southern and northern, or eastern and western children. These differences in requirements will also influence the choice of the children's books. Attention is called to the fact that much of the material listed here calls for an expenditure of interest, resourcefulness, and ingenuity rather than of money only.

"Tool" Materials.*

1. Braillewriter.

   One writer to three teachers is sufficient unless there is much transcribing to be done.

2. Braille slates and styluses.

*Manufacturers of braille apparatus supply material in perfect working order, but many things can happen to injure or put them out of order. Rainy or muggy weather causes wood to swell and stick; extreme dryness or exposure to excessive heat makes it shrink unduly. Dust will accumulate on parts when not in constant use. Store away apparatus so it will not be subjected to exposure or dust. A drop of oil on moving parts is a great aid to easy operation. This is particularly true of braillewriters. Classrooms should be equipped with oil cans. Styluses are sometimes used as levers. They often bend or break under this indignity. (F. C. Bryan Howe Memorial Press.)

There should be one slate and stylus for each child, and an ample supply of extra styluses.

3. Paper.

For any written matter that is not to be used frequently or kept permanently, a light weight manila Oak Tag paper is best. For writing that is to be kept, or that will be read frequently, a heavier manila paper is probably better. Perkins Institution manila holds the dots well, and its fibers do not break as the stylus punches it. This paper is 90 pounds to the ream of sheets measuring 24″ x 36″. One of the most important considerations in the choosing of braille paper is the manner in which it receives a braille dot. Broken fibers irritate the children's fingers and blur the letters, thereby hampering the development of interest in both reading and writing. A light weight paper is much better for children to use, as the physical effort required to punch dots through heavy paper is a serious deterrent to good spelling and writing. Some of our schools have at times used paper which would strain the muscles of a truckman. Also, if too thick paper is used, there is insufficient room in the slate pits for both paper and stylus.

4. Garin process for duplicating hand-transcribed braille.

At the request of the American Foundation for the Blind, M. Garin of France has labored to perfect an invention which makes possible the satisfactory reproduction of hand-transcribed braille. By this method more than fifty copies can be struck off from one paper plate. This plate can be made by any accurate teacher on a braille slate or on a specially constructed Stainsby-Wayne braillewriter.

The use of the Garin process of reproducing hand-transcribed braille will prove a boon to instructors of blind children and especially to primary teachers. One of these outfits is probably sufficient for a small school.

5. Paper-cutter and shears.

These are both necessary for use in cutting braille slips, pages of hand-transcribed books, etc.

6. Plasticine or "Plasteline."

This or some other non-stick material for modeling is invaluable for use with blind children. The pupils should have a generous amount of it for constructive modeling, but naturally should not be allowed to waste it.

7. Scissors with blunt points and paper for cutting.

Paper cutting which is carefully planned is excellent training in motor co-ordination. Although the colored papers used in schools for the seeing are desirable, newspapers and colored wrapping paper are good substitutes.

8. Class bulletin board.

This is one of the most serviceable of devices. It is possible but not advisable to use plain art cloth, in place of a real bulletin board, but for the vigorous handling which these boards will receive, a cork board with a well-made frame is best. See illustration opposite page 24.)

Vocabulary Lists.

The balanced development of the blind child's vocabularly is one of the chief concerns of the teacher of primary reading. It is desirable that she have at her disposal every available means of ascertaining the ex-

tent of the child's present word knowledge in order that she may know what words he must learn if he is to compare favorably with other pupils of his age and grade.

The Teacher's Word Book by Dr. Edward L. Thorndike of Columbia University is invaluable for teachers of all grades. It is a list of 10,000 words chosen from 41 different sources, and so arranged as to show, for each word, its frequency of occurrence and the extent of its distribution. Published by the Bureau of Publications, Teachers College, Columbia University, New York, 1921.

A Reading Vocabulary for the Primary Grades by Arthur I. Gates of Teachers College, is the most practical list for use in primary classes for the blind. It is "a list of 1500 words which have been selected to be suitable in all forms of reading material in Grades 1, 2, and 3." Published by the Bureau of Publications, Teachers College, Columbia University, New York, 1926.

A Basic Writing Vocabulary by Dr. Ernest Horn, Director of the University of Iowa Elementary School, is another valuable list. It gives the "10,000 words most commonly used in writing." University of Iowa Monographs in Education, First Series, No. 4. April 1, 1926. Published by the College of Education, University of Iowa, Iowa City, Iowa.

The editors of the Twenty-fourth Yearbook of the National Society for the Study of Education have compiled a list of words, which is quoted in full below. This is a composite of three other lists. This same Yearbook contains a list of words compiled by Supt. H. W. Kircher of Sheboygan, Wisconsin.

THE COMMONEST WORDS IN THE SPOKEN VOCABULARY OF CHILDREN UP TO AND INCLUDING SIX YEARS OF AGE

(From the Twenty-fourth Yearbook of the National Society for the Study of Education. Part I. *Report of the National Committee on Reading.* 1925. pp. 186-193.)

a	almost	any	ask
about	alone	anybody	asleep
across	along	anything	at
act	already	anyway	ate
aeroplane	always	apple	aunt
afraid	am	apples	auto
after	American	apron	automobile
afternoon	an	are	awake
again	and	aren't	away
ah	animal	around	awful
air	another	arm	
all	ant	as	
babies	bean	better	blow
baby	bear	bicycle	blue
back	beat	big	bluebird
bad	because	bigger	board
bag	bed	bill	boat
bake	bedroom	bird	body
ball	bee	birds	boil
balloon	been	birthday	bone
banana	before	biscuit	bonnet
band	begin	bit	book
bang	behind	bite	books
bank	believe	black	both
barn	bell	blackbird	bother
basket	belong	blanket	bottle
bat	belt	blind	bottom
bath	beside	block	bought
bathing	best	blocks	bounce
be	bet	blood	bow

box
boy
boys
brake
bread
break
breakfast
breast
brick
bridge
bring
broke
broken
broom
brother
brought
brown
brush
buggy
building
built
bump
bunch
bunny
bush
busy
but
butter
butterfly
button
buy
by
bye

cabbage
cage
cake
call
came
camel
can
candle
candy
can't
cap
cape
car
card
care
careful
carpet
carriage
carry
carrot
cars
cart
cat
catch
caught
cause
cent
center
cents
chain
chair
chairs
chalk
change
chase
cheese
cherry
chicken
chickens
child
children
chimney
chin
chocolate
choose
chop
Christmas
church
circle
circus
clap
class
clean
clear
climb
clock
close
cloth
clothes
cloud
coal
coat
cocoa
coffee
cold
collar
color
comb
come
comes
coming
company
conductor
cook
cookie
coop
corn
corner
cost
could
couldn't
count
country
cousin
cover
cow
cows
cracker
cradle
crawl
crayon
crazy
cream
crooked
cross
cry
cup
cupboard
curtain
cut
cute

daddy
dance
dandelion
dandy
day
dead
deer
deep

depot
desk
did
didn't
die
died
different
dig
dinner
dirt
dirty

dish
dishes
do
doctor
does
doesn't
dog
doing
doll
dollar
dollars

dolls
dolly
done
donkey
don't
door
down
downstairs
dozen
draw
drawer

dress
drink
drive
driver
drop
drum
dry
duck
dust

each
ear
early
Easter
easy
eat
egg

eggs
eight
either
electric
elephant
eleven
else

empty
end
engine
enough
envelope
even
ever

every
everybody
everyone
everything
eyes

face
fair
fall
family
far
farm
farmer
fast
fat
father
feather
feed
feel
feet
fell
fence

field
fifteen
fight
fill
find
fine
finger
finish
fire
fireman
first
fish
five
fix
fixed
flag

flew
floor
flour
flower
flowers
fly
flying
fold
follow
food
foot
football
for
forget
forgot
fork

found
four
fresh
Friday
friend
frog
from
front
fruit
full
fun
funny
furniture

game
garage

garden
gas

gasoline
gave

get
gate

getting
girl
girls
give
glad
glass
glasses
go
God
goes
going
gold
gone
good
good-bye
goose
got
grandma
grapes
grass
gravy
gray
great
green
ground
grow
guess
gum
gun

had
hair
half
hammer
hand
handkerchief
handle
hands
hang
happy
hard
has
have
haven't
hay
healthy
hear
heard
Heaven
heavy
hello
help
hen
her
here
here's
he's
hide
high
hill
him
his
hit
hoe
hold
hole
home
honey
hop
horn
horse
horses
hose
hot
house
how
hundred
hungry
hurry
hurt
husband

I
ice
ice cream
if
I'll
I'm
in
Indian
inside
into
iron
is
isn't
it
it's
I've

Jack
Jack Frost
jail
jelly
jump
just

keep
kettle
key
kick
kill
killed
kind
kiss
kitchen
kitten
kitty
knee
knew
knife
knock
knocked
know
known

ladder
lady
lake
land
last
late
laugh
lawn
lay
leaf
learn
leave

leaves
left
leg
lemon
lesson
let
let's
letter
lettuce
light
like
line
lion
listen
little
live
lock
long
look
looked
looking
looks
lost
lot
lots
love
low
lunch

machine
mad
made
make
makes
making
mamma
man
many
marble
March
mark
match
matter
May
may
me
mean
meat
medicine
meet
men
merry-go-round
middle
might
milk
mind
mine
minute
miss
Monday
money
monkey
moon
more
morning
most
mother
mouse
mouth
move
Mr.
much
mud
music
must
mustn't
my
myself

nail
name
napkin
naughty
near
nearly
neck
need
needle
neither
nest
never
new
next
nice
nickel
night
nightgown
nine
no
nobody
noise
none
nose
not
nothing
now
number
nurse
nut

o'clock
of
off
office
old
on
once
one
ones
onions
only
open
or
orange
oranges
other
ouch
ought
our
ours
out
outdoors
over
own

pack
page
pail
paint
pair
pan
papa
paper
parade
park
part
party
pass
past
paste
pat
pattern
pay
peach
peanut
peas
peep
pencil
penny
people
piano
pick
picnic
picture
pictures
pie
piece
pieces
pig
pigeon
pigs
pile
pillow
pin
pink
pipe
pitcher
place
plant
plate
played
playing
please
plow
pocket
point
pole
policeman
pony
poor
pop
porch
pot
potato
potatoes
pound
pour
powder
pretty
pull
pumpkin
punch
puppy
purple
push
pussy
put
putting

quick
quiet
quite

rabbit
race
radish
rain
raining
rake
ran
rat
reach
read
ready
real
really
red
reindeer
remember
rest
ribbon
ride
right
ring
river
road
robin
rock
rode
roll
roof
room
rope
roses
round
row
run
running

said
sail
salt
same
sand
sandwich
Santa Claus
Saturday
saucer
save
saw
says
scared
school
scissors
seat
second
see
seed
seeds
sew
seen
sell
send
sent
set
seven
seem

shall
she
sheep
shelf
shell
shine
shoe
shoes
shoot
shop
shot
should
shovel
show
shut
sick
sidewalk
silk
silver
sing
sir
sister
sit
sitting
six
skate
skip
sky
sled
sleeping
sleepy
slide
slip
slippers
slow
small
smell
smoke
smooth
snow
so
soak
socks
soft
sold
soldier
soldiers
some
somebody
someone
something
song
soon
sound
soup
sour
sparrow
spider
spill
spoon
spring
sprinkle
square
squirrel
stairs
stand
standing
star
start
station
stay
steal
steam
stem
step
stick
still
stocking
stockings
stone
stop
stopped
store
story
stove
straight
straw
strawberry
street
string
strong
stuck
stuff
such
sugar
suit
summer
sun
Sunday
Sunday-school
sunshine
supper
suppose
sure
sweater
sweep
sweet
swim
swing

table
tablecloth
tag
tail
take
takes
taking
talk
talking
tea
teacher
tear
teeter
teeth
telephone
tell
ten
tent
than
thank
Thanksgiving
that
that's
the
their
them
then
there
these
they
thing
things
think
thirsty
this
those
though
thought
thousand

thread
three
through
throw
thumb
ticket
tie
tiger
tight
till
time
times

tiny
tip
tire
tired
to
to-day
toe
together
told
to-morrow
tongue
too

took
tooth
top
touch
towel
town
toy
toys
track
train
tree
trees

truck
trunk
trying
tub
Tuesday
turkey
turn
turned
twelve
twenty
two

umbrella
uncle
under

until
up
upon

upstairs
us
use

used

very

wagon
wait
wake
walk
walking
wall
want
wanted
wants
warm
was
wash
washed
washing
wasn't
watch
water
way

we
wear
week
well
we'll
went
were
we're
wet
we've
what
what's
wheel
when
where
which
while
whip

whistle
white
who
whoa
whole
whose
why
wide
will
wind
window
windows
winter
wipe
wire
wish
wishes
with

wolf
woman
wonder
won't
wood
woodpecker
woods
word
work
worm
would
wouldn't
write
writing
wrong

yard
year
yellow

yes
yesterday
yet

you
your
yours

yourself

Books.

In the bibliography will be found a list of books which are acceptable for use with the children during the three periods of primary reading instruction. All the primers and primary readers that are known to be in braille are included. Teachers who use some copyrighted reading method may wish to have other readers put into braille, but this should probably be done by the teachers themselves by the Garin process.

The list of "Other Material in Braille" by no means represents all the braille books that are available. When the teacher chooses the books for the class library table, she should keep in mind four points: (1) the mental and physical ages of the youngest and oldest members of her class; (2) their degree of reading efficiency; (3) the children's natural interests; (4) their probable understanding of the vocabulary used in the books.

If the children in the initial period of reading instruction are more than eight years old, mentally, the animal stories listed under the first period may not suit their needs at all. Since the stories given under the third period are more difficult in vocabulary, and since some of them are also written in contractions, the teacher may be compelled to do much hunting for material that will meet the requirements of her class.

There are now in 1928 three juvenile braille magazines of national circulation which are of real interest to children. These are: Juvenile Braille Monthly (Full Spelling); Juvenile Braille Magazine (Grade One and a Half); The Searchlight (Full Spelling). For addresses, see page 210 of the Bibliography.

Supplementary Reading Material.

1. Flash cards such as the Horn-Shields Flash Cards published by Ginn and Company should be put into braille for use with the pupils. The American Foundation is experimenting with these cards to see if it will be practicable to emboss them for distribution by some braille publishing house.

2. A few publishing houses are putting out reading games for the seeing which are suitable for use with beginners who are blind. As a rule teachers will use these games as practical models for others which they invent to fit the needs of the moment.

3. "An educational rack such as the one shown opposite page 196 is practical for flash card drill and informal tests. The rack in the picture is made from heavy weight paper, the strips forming the pockets being stitched or glued to the back. Word or sentence slips are held firmly yet are easily moved when lifted by the top edge. Racks like these can be of different sizes and shapes." *

The Boston School Board, shown opposite page 196, has proved to be very popular with children who have used it. "It is designed primarily for use with partially seeing children, but has proved a constant stimulus to reading in one class of small beginners. The board has grooves into which letter, word, and sentence strips can be slipped. Whole tests of the sentence completion variety have been given by means of this board. Incomplete sentences are on the board when it is given to the pupil. In a box are a collection of words or phrases on slips which the child can slide onto the

*Quoted from "Present Status of Instruction in Primary Braille Reading in Residential and Day School Classes for the Blind."

board in the proper places to complete the thought of the sentence. This board is manufactured by the Ropes Educational Service, 177 State Street, Boston, Massachusetts."*

4. The peg-board is not an indispensable part of the equipment for beginning reading. Many successful reading teachers never use peg-boards of any sort. There are some few children, however, who are helped by the building up of the letters in the peg-boards. Peg-boards are especially helpful for use with children who have difficulty in learning the numbers of the dots. The reversible peg-boards are practical, providing the pegs do not stick as they may do in damp weather. Six marbles fitted into the braille basic group made in clay or countersunk in a wood block appeal to the children.

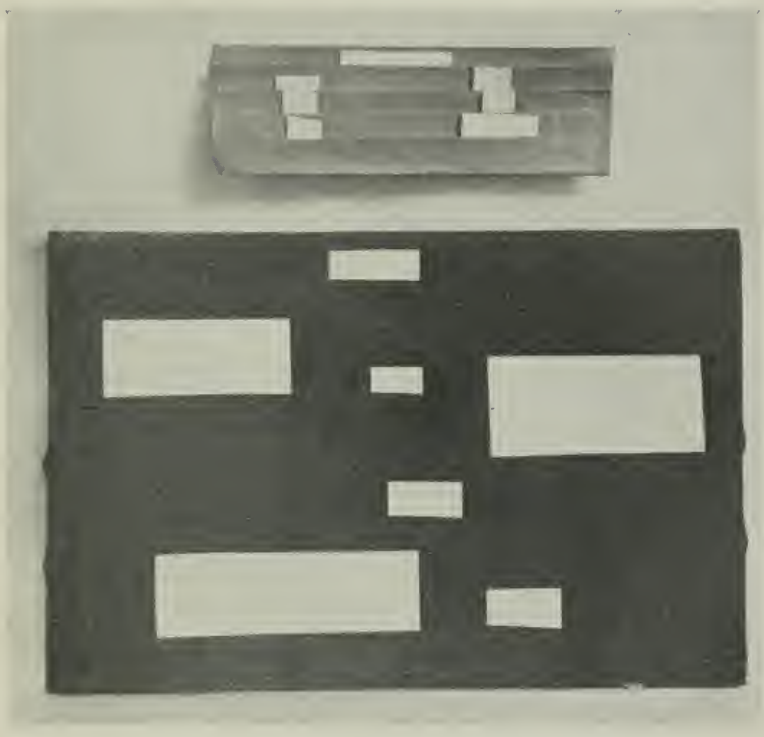
Test Material.

Suggestions as to the test materials will be found in the chapter on "Tests and Records." Whatever test material has already been adapted for use with blind children should be available for use everywhere.

Museum of Familiar Objects.

Such a museum as this will grow with the years. Its contents should be chosen primarily to meet the intellectual needs of the children rather than for spectacular display. It should contain objects which are mentioned in the children's stories; others relating to the life of the family, the school, and the community; and still others relating to nature study and elementary geography. However, a school in the country

*Quoted from "Present Status of Instruction in Primary Braille Reading in Residential and Day School Classes for the Blind."



Educational Rack and Boston School Board

will use living models for many of the objects which should appear in the museum of a city school. The children should be encouraged to add whatever they can to their school or class museum. The following list of objects is purely suggestive:

1. Doll house—living room, dining room, kitchen, bedroom, bathroom, attic, cellar. Ready-made doll houses that are large enough to be of any practical use are extremely expensive. They may, however, be made most satisfactorily with sloyd tools from six orange crates and some cardboard. For instance, the doll's living room might have: one large side-table, radio, bookcase, piano, rocking-chair, foot-stool, straight-back chair, two upholstered chairs, reading lamps and a table lamp; painted walls or real wall paper; window shades and draperies, a large rug, two or three wall pictures, and a few pieces of bric-a-brac. Many of these things can be made by the children themselves.

2. Grocery store—counter, shelves, and storeroom are made from boxes and boards of different sizes.

3. Meat market—boxes, boards, and cardboard scales and knives make satisfactory properties.

4. Clothing materials—samples of cotton, wool, silk, satin, linen, and yarn.

5. Odors—bottles containing coffee, tea, cinnamon, sulpho-naphthol, and other common things which are recognizable by their color.

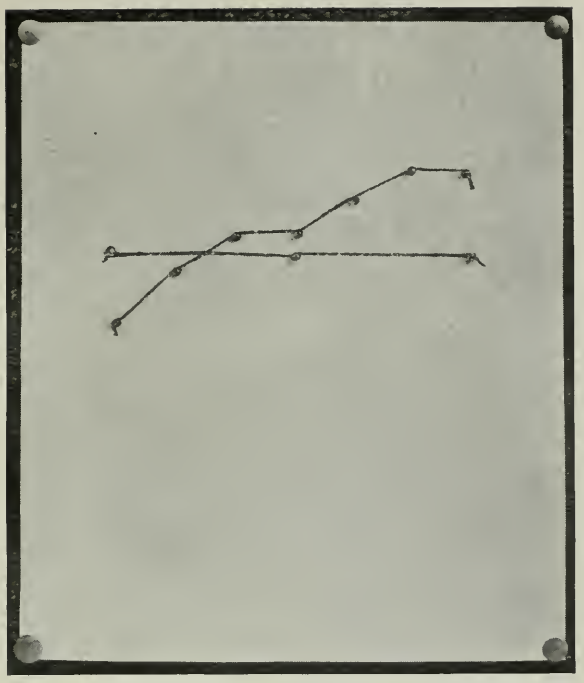
6. Town life—toy houses, churches, banks, street-cars, telegraph poles, arc lights, stores, etc.

7. Rural life—wherever possible, stuffed specimens of a sheep, a pig, a hen, etc. If models are used they should be as nearly correct in size and shape as is feas-

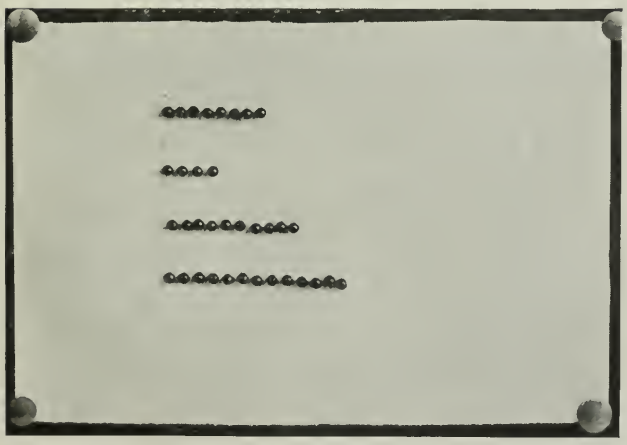
ible, and should be covered with the real animal skin. There should be models or specimens of domestic animals and common birds, barns, haystacks, corn-cribs, shocked corn and wheat, plows, rakes, tractors, rocks, and soils.

8. Wild life—models or stuffed specimens of a fox, wolf, lion, bear, common snakes, deer, etc.

9. Transportation—models large enough for the parts to be distinctive to the touch; horse and wagon, bicycle, motor-car and truck, street-car, railroad train, canoe, rowboat, sailboat, airplane, etc.



Record Chart Showing "String and Pin" Curve



Task Accomplishment Chart

ABBREVIATIONS

The following abbreviations refer to publishers and publications frequently mentioned in the bibliography:

A. A. I. B. —Proceedings of the American Association of Instructors of the Blind.

A. F. B. —American Foundation for the Blind, Inc., 125 East 46th Street, New York, N. Y.

A. P. H. —American Printing House for the Blind, Louisville, Kentucky.

H. M. P. —Howe Memorial Press. Perkins Institution for the Blind, Watertown, Massachusetts.

H. P. S. —Howe Publishing Society, 3111 Euclid Avenue, Cleveland, Ohio.

Jr. of E. R. —Journal of Educational Research, Public School Publishing Company, Bloomington, Illinois.

Jr. of N. E. A. —Journal of the National Education Association. National Education Association of the United States, 1201 Sixteenth Street, N.W., Washington, D. C.

Outlook —Outlook for the Blind. American Foundation for the Blind, Inc., 125 East 46th Street, New York, N. Y.

P. I. B. —Publication of the Department of Research, Perkins Institution for the Blind, Watertown, Massachusetts.

P. I. I. B. —Publication of the Department of Research, Pennsylvania Institution for the Instruction of the Blind, Overbrook, Philadelphia, Pa.

ADDRESSES OF PUBLISHERS

Addresses of publishers mentioned in the bibliography:

Henry Altemus Company, 1326 Vine Street, Philadelphia, Pa.

American Book Company, 88 Lexington Avenue, New York, N. Y.

D. Appleton and Company, 35 West 32nd Street, New York, N. Y.

The Bookhouse for Children, 360 N. Michigan Blvd., Chicago, Ill.

Milton Bradley Company, 49 Willow Street, Springfield, Mass.

The Century Company, 353 Fourth Avenue, New York, N. Y.

F. S. Crofts and Co., Inc., 66 Fifth Avenue, New York, N. Y.

F. A. Davis Co., Philadelphia, Pa.

Doubleday, Page and Company, Garden City, New York.

E. P. Dutton and Company, 681 Fifth Avenue, New York, N. Y.
A. Flanagan Company, 521 Laflin Street, Chicago, Ill.
Samuel Gabriel Sons and Company, 76 Fifth Avenue, New York, N. Y.
Ginn and Company, 15 Ashburton Place, Boston, Mass.
Harper and Brothers, 49 East 33rd Street, New York, N. Y.
D. C. Heath and Company, 231 West 39th Street, New York, N. Y.
Houghton Mifflin Company, 4 Park Street, Boston, Mass.
J. B. Lippincott Company, West Washington Square, Philadelphia, Pa.
Little, Brown and Company, 34 Beacon Street, Boston, Mass.
Longmans, Green and Company, 55 Fifth Avenue, New York, N. Y.
Lothrop, Lee and Shepard Company, 275 Congress Street, Boston, Mass.
The Macmillan Company, 60 Fifth Avenue, New York, N. Y.
McIndoo Publishing Company, Kansas City, Mo.
Newson and Company, 27 West 23rd Street, New York, N. Y.
Penn Publishing Company, 925 Filbert Street, Philadelphia, Pa.
Public School Publishing Company, Bloomington, Ill.
Rand McNally and Company, 536 South Clark Street, Chicago, Ill.
Fleming H. Revell Company, 158 Fifth Avenue, New York, N. Y.
Row, Peterson and Company, 623 South Wabash Avenue, Chicago, Ill.
Charles Scribner's Sons, 597 Fifth Avenue, New York, N. Y.
Silver, Burdett and Company, 221 Columbus Avenue, New York, N. Y.
Frederick A. Stokes Company, 443 Fourth Avenue, New York, N. Y.
Teachers College, Bureau of Publications, Columbia University, New York, N. Y.
University of Chicago, Department of Education, Chicago, Ill.
University of Iowa, College of Education, Iowa City, Iowa.
Volland and Company, Joliet, Ill.
Wheeler Publishing Company, Chicago, Ill.
John C. Winston Company, 1006 Arch Street, Philadelphia, Pa.
World Book Company, Park Hill, Yonkers-on-Hudson, N. Y.

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Primers and Readers in Braille:

Aldine Reader, Book One. F. E. Spaulding and C. T. Bryce. 2 vols. (Full spelling) Newson and Company. H. P. S.

Aldine Reader, Book Two. F. E. Spaulding and C. T. Bryce. 2 vols. (Full spelling) Newson and Company. H. P. S.

Aldine Reader, Book Three. F. E. Spaulding and C. T. Bryce. 2 vols. (Full spelling) Newson and Company. H. P. S.

Aldine First Language Book, Part One. F. E. Spaulding and C. T. Bryce. (Full spelling) Newson and Company. H. P. S.

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Brockway Primer and Chart. H. P. S.

Gordon First Reader. Emma K. Gordon and Marietta K. Stockard. 1 vol. (Full spelling) D. C. Heath and Company. A. P. H.

Learn to Study Readers, Book I. Ernest Horn and Grace Shields. 1 vol. (Full spelling) Ginn and Company. H. P. S.

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